Observations of Binary Stars with the Differential Speckle Survey Instrument. VII. Measures from 2010 September to 2012 February at the WIYN Telescope

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ABSTRACT

We report on speckle observations of binary stars carried out at the WIYN Telescope over the period from September 2010 through February 2012, providing relative

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astrometry for 2521 observations of 883 objects, 856 of which are double stars and 27 of which are triples. The separations measured span a range of 0.01 to 1.75 arc seconds. Wavelengths of 562 nm, 692 nm, and 880 nm were used, and differential photometry at one or more of these wavelengths is presented in most cases. Sixty-six components were resolved for the first time. We also estimate detection limits at 0.2 and 1.0 arc seconds for high-quality observations in cases where no companion was seen, a total of 176 additional objects. Detection limits vary based on observing conditions and signal-to-noise ratio, but are approximately 4 magnitudes at 0.2 arc seconds and 6 magnitudes at 1.0 arc seconds on average. Analyzing the measurement precision of the data set, we find that the individual separations obtained have linear measurement uncertainties of approximately 2 mas, and photometry is uncertain to approximately 0.1 magnitudes in general. This work provides fundamental, well-calibrated data for future orbit and mass determinations, and we present three first orbits and total mass estimates of nearby K-dwarf systems as examples of this potential.

Subject headings: binaries: visual — techniques: interferometric — techniques: high angular resolution — techniques: photometric

1. Introduction

Binary stars remain an important tool in furthering two fundamental areas of astrophysics: (1) they contribute to an understanding of stellar structure and evolution by providing empirically-determined masses of stars, and (2) when used statistically, observationally-determined separations, magnitude differences, and orbital parameters can yield information important for understanding the relative importance of star (and by extension, exoplanet) formation mechanisms. Speckle imaging has contributed in both areas over its long history, and indeed the technique has seen a resurgence in recent years due to the more widespread use of electron-multiplying CCDs (EMCCDs) in speckle work (Tokovinin and Cantarutti 2008; Horch *et al.* 2011a; Docobo *et al.* 2010; Balega *et al.* 2013). In addition to opening new parameter space for the measurement of binary systems due to their sensitivity and readout speed, these devices have enabled the use of speckle imaging for faint (stellar) companion detection for stars thought to host exoplanets (Howell *et al.* 2011; Howell *et al.* 2016; Furlan *et al.* in press; Hirsch *et al.* in press). Speckle imaging has been used together with adaptive optics to determine if a stellar companion is present, and if so, what its brightness relative to the primary star is (*e.g.* Crossfield *et al.* 2016), which is an important consideration in deriving the correct radius of the exoplanet (Ciardi *et al.* 2015). Adaptive optics and speckle imaging are essentially complementary in this regard because the bulk of adaptive optics observations have relatively shallow detection limits within 0.2 arc seconds due to the fact that the wavelengths of observation are usually in the infrared; in contrast, speckle imaging provides diffraction-limited imaging over a very small field of view, but in visible wavelengths. Therefore, the detection limits close to the target star are often deeper for a comparable telescope aperture, something that enables

astrophysics with close binary stars as well as exoplanet host star vetting.

Our past work at the WIYN[1] telescope has involved both surveys of binary stars and exoplanet host stars. In particular, earlier papers in this series have detailed our complete survey of *Hipparcos* double stars and suspected doubles, which began in the late 1990's (Horch *et al.* 1999), was active over the next fifteen years (*e.g.* Horch *et al.* 2012, Horch *et al.* 2015a, and references therein), and has continued through the present work. This program has contributed a large amount of relative astrometry and photometry data as well as about two dozen orbits and total mass estimates. Some of the smallest separation systems that we have successfully observed at WIYN have had separations below the diffraction limit of ∼50 mas at 692 nm (Horch *et al.* 2011b), which has led to follow-up observations at larger telescopes and the determination of a handful of short-period orbits, with periods of a few months to a few years (Horch *et al.* 2015b). In the area of exoplanet host star observations, we have developed a methodology for companion detection from reconstructed images obtained from speckle data (Horch *et al.* 2011a, Howell *et al.* 2011), and used this to estimate the fraction of *Kepler* exoplanet hosts that also have a stellar companion (Horch *et al.* 2014). We have also set limits on stellar companions for exoplanets with eccentric orbits (Kane *et al.* 2014) and developed techniques for assessing whether a companion star is likely to be gravitationally bound to its primary (Everett *et al.* 2015; Teske *et al.* 2015).

The observations described here represent our seventh (and so far largest) installment of relative astrometry and photometry of binary stars. This brings the total number of measures contributed by the WIYN speckle program to over 8000. We anticipate that after this there will be one more large group of measures to be published from data taken at WIYN on the general binary survey work that will cover the time frame of mid-2012 to the end of 2013. From that point forward, the observing lists changed significantly to accommodate new scientific goals including more exoplanet host star observations, and less time was spent on binary star surveys. Most *Hipparcos* double stars and suspected doubles within 250 pc of the solar system and observable from WIYN had been measured by our program by the end of 2013, and many of the binaries amenable to providing astrophysical information within the next decade had been identified. Since that point, the focus has been on understanding multiplicity as a function of spectral type and metallicity, and in following up on promising systems for mass estimates. This paper, while mainly contributing to the earlier survey work, also points the direction to these new projects involving star formation and multiplicity statistics by providing first orbits for three K-dwarf systems.

[1]At the time of these observations, the WIYN Observatory was a joint facility of the University of Wisconsin-Madison, Indiana University, Yale University, and the National Optical Astronomy Observatories.

2. Observations

The observations were carried out over six runs at the WIYN telescope, specifically, 17-21 Sep 2010, 23-26 Oct 2010, 11-16 Jun 2011, 7-11 Sep 2011, 10-11 Dec 2011, and 4-8 Feb 2012. In each case, an observing list was constructed primarily from *Hipparcos* Double Stars (HDSs) and *Hipparcos* suspected doubles (ESA 1997), double-lined spectroscopic binary stars identified in the Geneva-Copenhagen spectroscopic survey (Nordström *et al.* 2004), and stars we have previously found to be double in our own program and reported in earlier papers in this series.

For all observations here, the Differential Speckle Survey Instrument (DSSI) was used (Horch *et al.* 2009). The instrument can mount to either of the Nasmyth ports of the WIYN telescope and takes speckle observations in two filters simultaneously. The DSSI observing program at WIYN began in 2008, and the instrument was upgraded to use two electron-multiplying CCD cameras in January of 2010. More recently, DSSI also been used at Lowell Observatory's Discovery Channel Telescope (DCT), and at both the Gemini North and Gemini South telescopes.

The typical observing sequence was to record 1000 40-ms frames of a target star in two filters simultaneously. Each frame consists of a 128×128-pixel subarray on the chip, which represents a field of view of approximately 2.8×2.8 arc seconds. This was followed by a similar sequence of a bright (5th magnitude) unresolved star that is within a few degrees of the science target. The latter serves as an estimate of the speckle transfer function, which is then used in the data analysis. For fainter targets, we sometimes took more than 1000 frames; for example, for a 12th or 13th magnitude star, we would typically take 3000-5000 frames, depending on seeing conditions. To make observations more efficient, we would observe up to several science targets that were close together on the sky in a sequence of increasing right ascension, working in a single bright unresolved calibrator at the appropriate moment based on its right ascension. This star was then used as the calibrator for all science targets in the group. The resulting data files were stored in FITS format, each object having two files, one for each wavelength used.

3. Data Reduction and Analysis

3.1. Determination of the Pixel Scale and Orientation

The pixel scale and orientation were determined in a similar fashion as in our previous work at WIYN. A slit mask that mounts to the tertiary baffle support structure on the telescope is used. Once in place, this allows us to take speckle data of a very bright unresolved star (typically 2nd or 3rd magnitude) through the slits. The resulting images show a series of superimposed fringes of different spatial frequencies. If a speckle sequence is taken and the spatial frequency power spectrum of the ensemble of images calculated, these fringes map to sharp, linear features in the Fourier plane that can be fitted with high precision. Using a measure of the separation of the slits, the distance from the mask to the focal plane, the wavelength of the light used, and the focal ratio

of the telescope, the spatial frequencies obtained from the fit in terms of cycles per pixel can be translated into cycles per arc second. Upon inverting, this then yields the scale in arc seconds per pixel.

Three of the four quantities needed for the calibration are straightforward to measure: observatory staff have measured the distance from the baffle support to the nominal focal plane to much better than 0.1%. The slit spacing has been measured directly from the mask to a similar precision by one of us (E.H.). The focal ratio of the telescope is of course well-known. The final quantity, the effective wavelength of the observation, is a combination of the filter and atmospheric transmission, quantum efficiency of the detector, and the spectrum of the star being observed. In order to get the best possible value of this quantity, we use the Pickles (1998) spectral library, interpolating to the correct spectral type when needed, and we combine this with vendor-provided curves for quantum efficiency and filter transmission. A Kitt Peak atmospheric transmission curve is available from the observatory website. By simulating the wavelength distribution that is in fact detected, we can then estimate the effective wavelength as the average value of the photon flux of this distribution.

As we have reported in earlier papers, the channel of DSSI where light reflects off of the dichroic element inside the camera (what we refer to as "Channel B") exhibits a slight variation in pixel scale as a function of position angle. This distortion is consistent with what would be expected if a reflective surface in the instrument, such as the dichroic, were not oriented at exactly at 45° relative to the incoming optical axis. We have extensively mapped out the effect by taking slit mask data at different orientations of the mask relative to the detector axes. This is easily accomplished by rotating the instrument adapter subsystem on the Nasmyth port. Figure 1 shows an example of the results in scale obtained as a function of rotator offset angle. In the case of the Channel B data, the variation is about ±2% from the mean, a typical result at WIYN. In contrast, the Channel A data show no clear evidence of such an effect, and so we simply average all of the values obtained for a given run to obtain the final value of the scale for that channel. The standard error of these values has an average of 0.026 mas/pixel; we view this as a lower limit to the uncertainty in the scale, as it is obtained from a single sequence of observations on only one star.

One possible source of systematic error in the scale determination is the effective wavelength of the slit mask observations, if the filter transmission curves or the stellar spectrum selected from the Pickles library are not good models of the observations. In order to investigate the effect of color variation on the scale determination, we observed two stars with the slit mask in a single run on three occasions. The stars were chosen to have very different spectral types, either A and M or A and K. If we subtract the two scales obtained in a given channel, the difference should be zero if there is no systematic effect in color. The value obtained in these cases is -0.036 ± 0.023 mas/pixel, showing that the systematic error due to the color calibration is therefore at most very modest. A conservative total scale uncertainty can be obtained by adding this value in quadrature with the 0.026 mas/pixel figure from the internal repeatability mentioned above, resulting in 0.044 mas/pixel, or about 0.2% of the nominal scale value.

The orientation angle between celestial coordinates and pixel axes is determined mainly by taking 1-s images of stars from *The Bright Star Catalogue* (Hoffleit and Jaschek 1982), and offsetting the telescope in different directions between exposures. By using the full area of the chip, we can obtain a sufficient baseline to measure the offset angle to $\sim 0.5^\circ$ in good conditions for a given run. Such a sequence of observations is usually taken nightly during the run, giving several measures per run, but if the sequence is judged to have been taken in poor seeing or under windy conditions, we sometimes removed a nightly sequence from further consideration. Using only runs where we have three or more sequences meeting the "high-quality" criteria, we conclude that the standard error in offset angle has average value of 0.38° per run when combining information in both channels.

Regardless of the offset angle between pixel axes and celestial coordinates, Channels A and B should be mirror images of one another about some symmetry axis that is nearly aligned with one of the pixel axes. To establish this small internal offset angle, we sought to combine both the A and B results to get a single value of this offset with the lowest random uncertainty. The mask files can be used in this regard to establish the axis of symmetry relative to the pixel axes to high precision by assuming that any offset angle in Channel B is the same relative to this axis as in Channel A, although opposite in direction. Thus, if the orientation angles obtained are merely averaged, then the result is an estimate of the angle made between the axis of symmetry and the pixel axes. For each run, we determined the mean value of this angle, and then averaging these results over all runs, we find a value of $\theta_0 = 0.12 \pm 0.13^\circ$. This figure is used with all runs in our analysis here. Then, the offset angle between this symmetry axis and celestial coordinates in Channel A is given by $+\theta_1$, and $-\theta_1$ in Channel B, where θ_1 is the average of the absolute value of the offset obtained using the 1-s offset images. In this way, the angle between the symmetry axis and the pixel axes remains the same from run to run, as it is most likely internal to the DSSI instrument, but the size of the offset in both directions relative to that axis varies from run to run, as that is most likely related to the small variations in the zero point of the instrument rotator and the mounting of the instrument on the telescope, which may change from run to run. Given this, the total uncertainty for the angle is obtained by adding the uncertainties in the determination of the symmetry axis and that of the 1-s images; we find $\sqrt{0.38^2 + 0.13^2} = 0.40^\circ$ as the final angle uncertainty from this calibration. This is assumed for all runs, as shown in Table 1.

3.2. Speckle Data Reduction

While our reduction method from raw speckle frames remains the same as in previous papers in this series, a brief summary is provided here for convenience. The frames are de-biased and the autocorrelation of each frame in the observation is computed. These are then summed. The same computation is performed on the speckle frames of the calibration point source. Both autocorrelations are Fourier transformed, and then the result for the science target is divided by that of the point source to deconvolve the speckle transfer function from the observation. The square-root of this function is then computed, which forms the diffraction-limited modulus estimate for the

science target's Fourier transform.

Lohmann *et al.* (1983) first described how phase information of the object's Fourier transform is contained in the summed triple correlation function of speckle images, and its Fourier-transform pair, the image bispectrum. We compute near-axis sub-planes of the bispectrum are then computed for the science observation following their methodology. The phase of the object's Fourier transform is then computed from these, using the relaxation algorithm of Meng *et al.* (1990). This is combined with the modulus estimate previously obtained to give the (complex) Fourier transform of the object. This is low-pass filtered with a 2-dimensional Gaussian function, and inverse transformed. The result is a diffraction-limited reconstructed image of the object. This is used to identify secondary and tertiary components in the case of binaries and trinaries, and used in the case of non-detections to estimate the detection limit of the observation as described further in Section 3.4.

In the case of binary and trinary stars, once rough positions of the components are determined from the reconstructed images, these are used as input for a fitting algorithm that computes final position angles, separations and magnitude differences of the components. This is a Fourier-based routine; the power spectrum of the object is formed by Fourier transforming the autocorrelation, and then it is divided by the point source power spectrum. The result for a binary star would be a pure fringe pattern, related to the square of a two-dimensional cosine function. From the separation, orientation, and depth of the fringes, the relative astrometric and photometric parameters for the components can be determined. We use a weighted least-squares fit to the power spectrum in order to arrive at the final parameters for each observation. The methodology of the weighting dates back to Horch *et al.* (1996), where as described there, we attempt to approximate a χ^2-minimization procedure. In order to do that, one must understand the true noise statistics in the power spectrum, which in turn requires a knowledge of the read noise of the detector and the number of photons per ADU as a function of the electron multiplying gain. We have studied this with our EMCCDs and built this into the current weighting model. More recently, Pluzhnik (2005) has provided a rigorous method for applying similar ideas to speckle data even for non-circular speckle transfer functions; our method is more heuristic in the sense that the variance of points in the power spectrum is estimated from the (properly scaled) data themselves and the final variance needed for calculating χ^2 is not an analytical function but instead a smoothed version of the derived variance function in the Fourier plane.

3.3. Double Star Measures

Our measures of double stars are found in Table 2. The columns give: (1) the Washington Double Star (WDS) number (Mason *et al.* 2001), which also gives the right ascension and declination for the object in 2000.0 coordinates; (2) the Aitken Double Star (ADS) Catalogue number, or if none, the Bright Star Catalogue (*i.e.* Harvard Revised [HR]) number, or if none, the Henry Draper Catalogue (HD) number, or if none the Durchmusterung (DM) number of the object; (3)

the Discoverer Designation; (4) the *Hipparcos* Catalogue number; (5) the Besselian date of the observation; (6) the position angle (θ) of the secondary star relative to the primary, with North through East defining the positive sense of θ; (7) the separation of the two stars (ρ), in arc seconds; (8) the magnitude difference (Δm) of the pair in the filter used; (9) the center wavelength of the filter; and (10) the full width at half maximum of the filter transmission. The position angle measures have not been precessed from the dates shown. Sixty-six pairs in the table have no previous detection of the companion in the *Fourth Catalogue of Interferometric Measures of Binary Stars* (Hartkopf, *et al.* 2001a); we propose discoverer designations of YSC (Yale-Southern Connecticut) 168-231 here. (Two systems discovered were trinaries.) This continues the collection of YSC discoveries detailed in our earlier papers in this series. In Figure 2, we show two characterizations of the data set as a whole; in panel (a) we plot the magnitude difference obtained as a function of separation, while in panel (b) we plot the same as a function of system apparent V magnitude.

3.3.1. Astrometric Accuracy and Precision

The astrometric accuracy of the data set is important to establish so that, when used in orbit calculations, a proper weighting can be used. Since the DSSI camera is a two-channel instrument, a fundamental calibration in this regard is a comparison between the results obtained in the channels for each observation. This is shown in Figure 3 for both position angle and separation. All observations in Table 2 are included. The results show that the repeatability between the two channels in position angle is a function of separation, while the repeatability in separation is essentially independent of separation. The average difference between the channels in position angle is -0.01 ± 0.04 degrees, with a standard deviation of 1.51 ± 0.03 degrees. In separation, the average difference is 0.06 ± 0.07 mas, with a standard deviation of 2.45 ± 0.05 mas. As these standard deviation values are the result of the subtraction of two measures that may be assumed to have similar precisions, the precision of individual measures in a single channel can be estimated by dividing these results by a factor of $\sqrt{2}$, resulting in an overall internal precision of 1.07 ± 0.02 degrees and 1.73 ± 0.04 mas. These numbers set the lower limit of the uncertainty for the data set. If the astrometry of paired measures from the two channels are averaged (which we did not do in Table 2), then there would be a further reduction of a factor of $\sqrt{2}$ in that case, resulting in a separation repeatability of about 1.2 mas for example, which is comparable to previous data sets we have analyzed from WIYN.

The position angle repeatability is expected to be a function of separation. Position angle measures may be viewed as having a linear measurement uncertainty equivalent to that of the separation measures, but orthogonal in direction (*i.e.* orthogonal to the vector direction of the separation). In that case, the position angle uncertainty is equal to $\delta\rho/\rho$ in radians, or using the value for $\delta\rho$ obtained here of 1.73 mas and converting to degrees, this is $0.099/\rho$, where ρ is entered in arc seconds. This is roughly consistent with Figure 3(a).

To determine the accuracy of our measures, we examine the results obtained here for stars

that already have well-determined orbits in the literature; specifically, we use systems that have either Grade 1 or Grade 2 orbits in the *Sixth Catalog of Visual Binary Star Orbits* (Hartkopf *et al.* 2001b). Only systems that have uncertainty estimates to the orbital elements are considered, so that we can propagate errors to estimate the uncertainties in the ephemeris positions and that the ephemeris uncertainties are less than 4° and 8 mas respectively. These limits were chosen so that the orbits are of high quality, but also so that the ensemble of systems of sufficient size to be statistically meaningful. We then calculate the ephemeris position angle and separation for the system for the epoch of our observations, and use the measures in Table 2 to obtain an observed minus ephemeris residual in both ρ and θ. The systems used for this study appear in Table 3. The residual plots in position angle and separation are shown in Figure 4. The repeatability uncertainties for single observations derived above, namely $0.099/\rho$ in position angle and 1.73 mas in separation, are plotted as solid lines. Also plotted as dotted lines are the uncertainties stated in the previous section for the measurement of the pixel scale and orientation. The plots indicate that, for position angle, the internal repeatability dominates the overall uncertainty for separations under 0.3 arc seconds, and above that value, the measures are limited by the orientation measures. For the separation measures, uncertainties for separations under ∼0.85 arc second are dominated by the internal repeatability while larger separations are limited by the the scale measurement. In searching for systematic error by studying average residuals, we find an average offset in position angle in Figure 4(a) of $-0.5 \pm 0.4°$ for the entire sample and $-0.3 \pm 0.4°$ for the sub-sample of systems with ephemeris uncertainties of less than 2°. For separation, the entire sample has an average residual of -0.9 ± 0.4 mas, with the subset of measures with ephemeris uncertainties of less than 4 mas yielding -0.6 ± 0.4 mas.

Two stars with high-quality orbits in the *Sixth Orbit Catalog* were not included for the study here. The first is FIN 312 = HIP 12390 = HR 781 = ϵ Cet. Although there is a Grade 1 orbit in the literature calculated by Docobo & Andrade (2013), measures published in 2014 and 2015 have all shown a slightly smaller separation than predicted by about 3 mas, and most since 2005 have the same offset, although the effect appears smaller in the 2005-2013 timeframe. The second is STF 1670 = HIP 61941 = γ Vir. This well-known visual binary has a Grade 2 orbit calculated by Scardia *et al.* in 2007, but has trended toward smaller separations than predicted since that time; the system has recently passed through periastron and is now rapidly increasing in separation. It is also the case that, at a separation of 1.65 arcseconds, the uncertainty in our plate scale determination dominates over the random uncertainties of internal measurement precision. So, our measures at that separation should be considered less reliable.

Overall, we conclude that there is no evidence of significant systematic offsets in either position angle or separation. At worst, there is a modest offset in separation of a fraction of 1 mas, but this could easily be accounted for in the uncertainty of the orbital elements used and the relatively small number of systems that meet our quality criteria. Therefore a good measure of the total uncertainty for any measure in Table 2 is obtained by adding the orientation and scale uncertainties in quadrature with the internal random uncertainties obtained from the repeatability study. For example, a

system with a separation of 0.1 arc seconds = 100 mas would have a position angle uncertainty of $\sqrt{0.40^2 + (0.099/0.1)^2} = 1.1^\circ$ and a separation uncertainty of $\sqrt{(0.044/22) \times 100)^2 + 1.73^2} = 1.74$ mas, whereas for a system with a separation of 1.0 arc second = 1000 mas, the results would be $\sqrt{0.40^2 + (0.099/1.0)^2} = 0.41^\circ$ degrees in position angle and $\sqrt{(0.044/22) \times 1000)^2 + 1.73^2} = 2.64$ mas in separation.

3.3.2. Photometric Precision

To judge the photometric precision, we first compute the parameter that in previous papers we have called q', which is given by the seeing of the observations multiplied by the separation of the pair. As shown for example in Horch *et al.* (2009), this parameter, in arc seconds squared, should be proportional to the separation divided by the isoplanatic angle, therefore providing a measure of to what degree (in relative terms) the observation is isoplanatic. If an observation lacks isoplanicity, one would expect that the magnitude difference obtained from a speckle analysis would be systematically too large.

In Figure 5, we show the differences in Δm obtained from our measures in Table 2 versus the *Hipparcos* measures, ΔH_p. Giants, variable stars, and trinary systems are removed from the sample prior to plotting, as are stars with $B - V$ colors greater than 0.6. None of our filters match the *Hipparcos* H_p filter, but it is instructive to see the comparison with each of the filters we used. The closest match is our 562-nm filter, which has width $\Delta\lambda = 40$ nm. We see in Figure 5(a) that the average difference $\Delta m - \Delta H_p$ is modest, and that the largest differences are found at the highest values of seeing times separation, above approximately 0.55 arcsec^2. In the case of the redder filters (panels c and e of the figure), a negative difference is present at low values of q', but above 0.55 arcsec^2, again we see a rough trend toward large positive offsets. This is expected, since in cases of high isoplanicity (and low q'), redder filters would generate a smaller magnitude difference than the bluer H_p filter for main-sequence stars, given the intrinsic color differences of the companions. However, for high values of q', the lack of isoplanicity eventually overwhelms that effect and leads to a larger Δm regardless of the color difference. In these panels, the data points are divided into two sub-groups depending on the estimated uncertainty of the ΔH_p measure in the *Hipparcos* Catalogue. If less than 0.1 magnitudes, then the point is plotted as a filled black circle, and if greater, then as an open circle with the color indicating the filter.

In panels (b), (d), and (f) of the figure, we plot the ΔH_p value as a function of our Δm for the high-quality subset of measures from panels (a), (c), and (e) respectively. Specifically, these are the measures that have $\delta(\Delta H_p) < 0.1$ magnitudes and $q' < 0.55$ arcsec^2. For the 562-nm filter, which is the closest match to ΔH_p, we find an average offset for this subset of 0.01 ± 0.03 magnitudes, with a standard deviation of 0.12 ± 0.02 magnitudes. Some of this uncertainty is due to the *Hipparcos* measure; the average uncertainty in this sub-sample is 0.052 magnitudes. Subtracting this value in quadrature from the standard deviation of the differences, we obtain 0.10 magnitudes. Thus, this is the best measure of the uncertainty of our magnitude differences. The other filters show

larger deviations from the unitary line and with larger scatter, as expected in the case of a sample of main sequence stars with a variety of colors. This should not be interpreted as a decrease in photometric precision in these cases, but merely the result of the difference in central wavelength of the filters. We also examined cases in Table 2 where four or more magnitude difference measures appear for a given pair in a single filter, and we computed the standard deviation of each group of observations. The average of these 12 cases, which are mainly observations in the 692-nm filter, is $\langle\sigma(\Delta m)\rangle = 0.09 \pm 0.02$ magnitudes, in good agreement with the uncertainty derived from the above study. Therefore, we believe the result of uncertainties typically ± 0.1 obtained in the 562-nm filter is probably indicative of the other filters as well.

3.4. Non-detections

In a number of cases, we observed stars under good conditions and failed to detect a companion star. The majority of these cases are examples of either *Hipparcos* suspected double stars or stars found to be double-lined spectroscopic binary stars by the Geneva-Copenhagen spectroscopic survey of G-dwarfs. (For many stars in the latter category, the separation is most likely too small to be measurable from WIYN.) For these cases, we have derived a detection limit estimate as a function of separation using the method described in previous papers. Briefly, we examine annuli in the reconstructed images that are centered on the central star and have center radius of a desired value. We determine all local maxima and minima in the annulus, and derive their mean value and standard deviation. We then estimate the detection limit as the mean value of the maxima plus five times the average sigma of the maxima and minima.

The current reduction pipeline produces a curve of this detection limit as a function of separation. Examples are shown in Figure 6. The typical curve rises sharply from the diffraction limit to a "knee" at a separation of 0.15-0.2 arc seconds, then it flattens out somewhat but continues to increase out to the outer limit of the plot, which is 1.2 arc seconds. It is interesting to note that this curve is very similar to the envelope of points in Figure 1(a), which is essentially a plot of all detected companions with the same axes. The degree of the flattening above 0.2 arc seconds is mainly determined by signal-to-noise ratio and how well the point source chosen for our Fourier deconvolution matches that of the science target, with high signal-to-noise and good matches leading to less flattening, while poor signal-to-noise and/or less perfect matches leading to more flattening. Thus, the curve can be roughly characterized by its value at two points: the knee, and the largest separation point. The curve can then be roughly reconstructed by drawing a line from a magnitude difference of zero at the diffraction limit up to the knee, and a second line from the detection limit at the knee to that at a large separation. In Table 4, we show detection limits determined in this way for 0.2 and 1.0 arc seconds for 176 stars for which no companions were found.

4. Orbits for Three Nearby K-Dwarf Binaries

Much of our binary star speckle work at WIYN to date has been focussed on *Hipparcos* double stars within 250 pc of the Solar System, without regard to spectral type. However, there are compelling reasons to refocus attention on a sample of K-dwarfs that are nearby. For G-dwarfs and M-dwarfs, multiplicity studies have either been completed or started (Raghavan *et al.* 2010; Winters *et al.* 2015). However, for K-dwarfs, less work has been done and yet for the nearest systems, speckle imaging samples separations that are comparable to the scale of our own Solar System. The main studies enabled by a target list of K-dwarfs are therefore to (a) discover how unusual our Sun is in its stellar solitude, (b) understand how many stars of different types are multiples, (c) provide fundamental statistics that will drive theoretical work in the area of star formation, and (d) provide a list of stars where nearby analogs to the Solar System might be found because they lack stars on planetary formation scales.

Because of these facts, two of us (T.H. and J.W.) identified a sample of K-dwarfs within 50 pc of the solar system using the RECONS[2] 25-pc database and *Hipparcos* results to 50 pc, many of which had not been previously observed with speckle imaging. Although we have begun to systematically observe these stars primarily at the DCT and Gemini, it was also useful to look at which of the stars presented here were serendipitously stars on this list. A total of 48 observations in Table 2 were made of 15 targets on the list of K-dwarfs, including three systems resolved here for the first time: YSC 198, 206, and 208. YSC 198 is actually the inner component of a triple star system, with the tertiary component having separation of ∼5 arc seconds. Four stars on the K-dwarf list were unresolved and appear in Table 4. Of all the K-dwarfs observed, three systems had sufficient data in the literature so that, combined with the astrometric data presented here, we were able to attempt first orbit calculations. We discuss these systems below, and orbital parameters are found in Table 5. Interestingly, two of these three systems have a previously-known wider component.

4.1. HDS 99Aa,Ab

This K7V pair at 31 pc has an orbital period of 8.7 years and semi-major axis of 132.1 mas, which translates to a physical separation of 4.2 AU. The orbit we calculated did not use the *Hipparcos* data point, due to the relatively short period compared with the length of the *Hipparcos* mission. The remaining data nonetheless span nearly a full period since 2007. The magnitude difference of the pair is less than 1, so we may estimate that the pair consists of perhaps a K7 primary star with a K9 secondary; this would imply a mass sum in the range of $1.15 M_{\odot}$, using a standard reference such as Schmidt-Kaler (1982). This is consistent with the mass sum calculated from the orbital parameters shown in Table 5, which already has a relatively small uncertainty. This system forms the inner pair of the common proper motion double LDS 3195AB, which has

[2]http://www.recons.org/

separation of 141 arc seconds (or 4450 AU). Our orbit is shown in Figure 7.

4.2. WSI 74Aa,Ab

The SIMBAD[3] database shows the spectral type of this pair to be K2.5V, which forms the inner system of HDS 1795AB. Given the magnitude difference of approximately 1.4, we estimate that this is a K2V+K6V system, implying a mass sum of $1.38M_{\odot}$, based again on data in Schmidt-Kaler (1982). While the orbital elements do not permit anything more than a very rough mass sum to be inferred at this point, it is nonetheless consistent with this value. We find a period of 2.6 years and a semi-major axis of 88 mas (2.1 AU). The wider component, which was out of our small field of view, is at a projected separation of 2.7 arc seconds (64 AU). The 4th Interferometric Catalog contains several non-detections by Tokovinin, but these are at or below the diffraction limit during the epochs in question for the orbit presented here. The plot of the orbit is shown in Figure 8.

4.3. HDS 2053

This system has the largest magnitude difference of the three systems under consideration here at approximately 2.3 magnitudes, so despite relatively few data points to work with for the orbit calculation, the determination of the quadrant for each observation should not be in question. We calculated this orbit with and without the *Hipparcos* point, given the orbital period. We present elements without the *Hipparcos* point in Table 5; when the point is included, the period is shorter by approximately 4 years, but the semi-major axis is similar. However, looking at the position of the *Hipparcos* point on the orbit, it is clear that there is a potential to derive a systematically low separation if averaging the position of the secondary over the lifetime of the *Hipparcos* mission. The resulting total mass estimate is $1.5 \pm 0.5M_{\odot}$. We estimate that this system consists of a K4V primary star with a M1V secondary, so that the expected total mass would be $\sim 1.2M_{\odot}$. The semi-major axis that we derive using the revised *Hipparcos* parallax is 9.5 AU. We show our orbit in Figure 9.

5. Summary

We have presented the results of over 2800 observations of double stars and suspected double stars using the dual-channel speckle imaging camera, DSSI, when it was resident at the WIYN Observatory at Kitt Peak during 2010-2012. The astrometric precision appears to be in line with previous papers in this series, generally $\sim$2 mas in separation and $\sim (0.1/\rho)^{\circ}$ in position angle, where ρ is entered in arc seconds. The photometric precision is generally about 0.1 magnitudes

[3]http://simbad.u-strasbg.fr/simbad

per observation. In cases where there is evidence for a lack of isoplanicity or if the secondary falls near the edge of the frame, we have not reported magnitude differences. One hundred seventy six additional objects showed no evidence of a companion and in these cases we have derived 5-σ detection limits at separations of 0.2 and 1.0 arc seconds.

The data presented here, along with existing relative astrometry already in the literature, permitted the calculation of preliminary orbits for three K-dwarf binaries at distances of 24 to 42 pc. The periods ranged from 2.6 to 23.5 years, and initial mass estimates from the orbital elements are consistent with the expected theoretical values for stars of that spectral type. These serve as examples for the potential of sustained, well-calibrated astrometry efforts on such systems.

The authors would like to thank all of the excellent staff at the WIYN telescope for their help during our observing runs. We were privileged to work with professionals of such dedication and skill. We used the SIMBAD database, the Washington Double Star Catalog, the Fourth Catalog of Interferometric Measures of Binary Stars, and the Sixth Orbit Catalog in the preparation of this paper. We gratefully acknowledge the role of the Kepler Science Office in upgrading DSSI to the two-EMCCD mode used here, support from National Science Foundation grant AST-0908125, which funded the observations discussed here, and grant AST-1517824, which funded the completion of the analysis and publication of this work.

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Table 1. Pixel Scale, Orientation, and Filters Used on Each Run

Run	Channel A			Channel B		
	Offset Angle (°)	Scale (mas/pix)	$\bar{\lambda}$ (nm)	Offset Angle (°)	Scale (mas/pix)	$\bar{\lambda}$ (nm)
Sep 2010	+5.51	21.793	692	−5.27	22.447	562,880
Oct 2010	+5.89	21.642	692	−5.64	22.987	880
Jun 2011	+5.99	21.641	692	−5.75	22.939	880
Sep 2011	+5.43	21.807	692	−5.19	23.137	880
Dec 2011	+5.00	21.529	692	−4.76	19.812[a]	562
Feb 2012	+5.99	21.471	692	−5.74	22.792	880
Est. Uncertainty	±0.40	±0.044	...	±0.40	±0.044	...

[a]A different optical configuration was used in this channel compared to the other runs.

Table 2. Double star speckle measures

WDS (α,δ J2000.0)	HR,ADS HD, or DM	Discoverer Designation	HIP	Date (2000+)	θ (°)	ρ ($''$)	Δm	λ (nm)	$\Delta\lambda$ (nm)
00022 − 2052	HD 224961	YSC 168	170	11.6837	39.8	0.1105	0.42	692	40
				11.6837	40.2	0.1156	0.88	880	50
				11.9430	39.9	0.1101	0.44	692	40
				11.9430	37.0	0.1176	0.65	562	40
00031 + 5228	HD 225064	HDS 3	250	11.9431	333.5	0.3221	3.16	692	40
				11.9431	333.5	0.3184	2.89	562	40
00061 + 0943	HD 126	HDS 7	510	10.7171	177.8	0.1871	0.21	692	40
				10.7171	178.0	0.1883	0.20	880	50
00067 + 0839	...	LSC 3	551	11.6864	15.6	0.5692	4.11	692	40
				11.6864	15.9	0.5676	3.08	880	50
00071 − 1551	HD 233	HDS 11	584	11.6837	253.1	0.4029	3.14	692	40
				11.6837	252.8	0.4054	2.71	880	50
				11.9430	253.3	0.4004	3.27	692	40
				11.9430	252.9	0.4049	3.54	562	40
				11.9431	252.9	0.4089	3.05	692	40
				11.9431	252.1	0.4109	3.32	562	40
00073 + 0742	HD 251	HDS 13	603	11.6865	320.7	0.3691	0.20	692	40
				11.6865	320.6	0.3683	0.19	880	50
00085 + 3456	HD 375	HDS 17	689	10.7143	81.0	0.1246	0.27	692	40
				10.7143	81.1	0.1238	0.32	562	40
00087 − 0213	HD 406	LSC 4	700	11.6891	108.6	0.9192	...	692	40
				11.6891	108.0	0.9166	...	880	50
00101 + 3825	...	HDS 23Da,Db	823	10.7143	328.6	0.1118	0.29	692	40
				10.7143	328.3	0.1123	0.37	562	40
00117 − 0942	HD 738	HDS 26	947	11.6892	77.0	0.7131	...	692	40
				11.6892	76.6	0.7138	2.98	880	50
				11.9431	76.4	0.7123	2.95	692	40
				11.9431	76.3	0.7134	...	562	40
00121 + 5337	ADS 148	BU 1026AB	981	10.7143	313.7	0.3384	1.02	692	40
				10.7143	313.6	0.3392	1.19	562	40
				11.6919	314.4	0.3427	1.05	692	40
				11.6919	314.3	0.3419	0.94	880	50
00164 − 0702	HD 1203	LSC 6	1303	11.9432	1.0	0.1666	0.63	692	40
				11.9432	0.6	0.1645	0.72	562	40
00164 − 2235	HD 1205	HDS 36Aa,Ab	1306	11.9431	217.4	0.2213	1.66	692	40
				11.9431	217.1	0.2261	1.88	562	40
00166 + 0814	HR 59	HDS 37	1319	11.6865	217.7	0.4791	3.99	692	40
				11.6865	217.9	0.4781	4.10	880	50
00182 + 5225	HD 1384	YSC 79	1460	10.7143	314.8	0.3391	3.46	692	40
				10.7143	314.3	0.3372	3.45	562	40
				11.6919	315.4	0.3401	3.46	692	40
				11.6919	315.6	0.3376	3.49	880	50
				11.9431	315.6	0.3379	3.42	692	40
				11.9431	315.7	0.3345	3.49	562	40
00246 + 1659	HD 2020	YSC 80	1946	10.7171	208.6	0.8983	3.54	692	40

Table 2—Continued

WDS (α,δ J2000.0)	HR,ADS HD, or DM	Discoverer Designation	HIP	Date (2000+)	θ (°)	ρ ($''$)	Δm	λ (nm)	$\Delta\lambda$ (nm)
				10.7171	208.5	0.8994	3.04	880	50
$00258+1025$	HD 2157	HDS 57	2035	11.6865	77.8	0.1094	0.96	692	40
				11.6865	78.1	0.1102	0.99	880	50
$00260+1905$	HD 2174	HDS 59	2048	10.7171	263.4	0.8239	2.33	692	40
				10.7171	263.0	0.8196	2.05	880	50
$00261-1123$	HD 2237	YR 4	2066	11.6892	182.3	0.3747	3.00	692	40
				11.6892	182.0	0.3704	2.52	880	50
				11.9432	180.8	0.3716	2.93	692	40
$00266-0003$	HR 101	HDS 61	2100	10.7171	275.9	0.4366	2.63	692	40
				10.7171	275.6	0.4350	2.65	880	50
				11.6891	276.1	0.4386	2.62	692	40
				11.6891	276.0	0.4386	2.63	880	50
$00274+1502$	BD+14 48	YSC 169	2173	10.7116	87.2	0.5651	3.53	692	40
				10.7116	86.9	0.5662	3.70	562	40
$00277-1625$	ADS 366	YR 1Aa,Ab	2190	10.7115	343.2	0.1209	0.47	692	40
				10.7115	344.9	0.1198	0.77	562	40
				11.6837	353.1	0.1138	0.31	692	40
				11.6837	353.2	0.1136	0.23	880	50
				11.9431	356.2	0.1112	0.33	692	40
				11.9431	356.5	0.1110	0.47	562	40
$00284-2020$	HR 108	B 1909	2237	10.7115	149.5	0.1132	0.39	692	40 [b]
				10.7115	151.3	0.1155	0.68	562	40 [b]
				11.6837	309.9	0.0487	0.24	692	40
				11.6837	308.5	0.0482	0.16	880	50
$00295+1501$	BD+14 52	HEI 200	2309	10.7116	61.4	0.7786	1.25	692	40
				10.7116	61.1	0.7780	1.31	562	40
				11.6865	61.4	0.7826	1.19	692	40
				11.6865	61.4	0.7839	1.09	880	50
$00307+1339$	BD+12 45	HDS 66	2411	10.7116	266.9	0.9843	3.18	692	40
				10.7116	266.6	0.9847	...	562	40
				11.6865	266.9	0.9834	2.57	692	40
				11.6865	266.9	0.9839	2.29	880	50
$00310+5015$	HD 2712	HDS 68	2437	10.7143	355.6	0.4224	2.60	692	40
				10.7143	355.6	0.4233	2.40	562	40
				11.6919	355.1	0.4232	2.63	692	40
				11.6919	354.9	0.4214	2.81	880	50
$00317+1929$	HD 2815	HDS 70	2502	10.7116	66.4	0.3067	2.25	692	40
				10.7116	66.3	0.3062	1.97	562	40
$00321+5000$	BD+49 116	COU 2151	2528	10.7143	99.4	0.1523	1.22	692	40
				10.7143	99.2	0.1510	1.30	562	40
				11.6919	99.7	0.1530	1.24	692	40
				11.6919	99.8	0.1536	1.16	880	50
$00321-1218$	HD 2893	HDS 71	2532	10.7171	315.8	0.3179	0.22	692	40
				10.7171	315.9	0.3185	0.34	880	50
				11.6892	312.9	0.3187	0.45	692	40

Table 2—Continued

WDS (α,δ J2000.0)	HR,ADS HD, or DM	Discoverer Designation	HIP	Date (2000+)	θ (°)	ρ ($''$)	Δm	λ (nm)	$\Delta\lambda$ (nm)
				11.6892	312.9	0.3182	0.36	880	50
				11.9432	311.7	0.3174	0.33	692	40
				11.9432	311.8	0.3161	0.53	562	40
00324 + 0657	ADS 449	MCA 1Aa,Ab	2548	10.7116	272.0	0.1790	1.86	692	40
				10.7116	271.5	0.1860	2.25	562	40
				11.6865	269.2	0.1546	1.84	692	40
				11.6865	269.1	0.1536	1.68	880	50
00324 + 2147	HD 2891	HDS 72	2549	10.7116	33.9	0.2059	0.91	692	40
				10.7116	33.7	0.2055	0.91	562	40
00327 + 3851	HD 2923	HDS 73	2576	10.7144	74.7	0.2083	0.15	692	40
				10.7144	74.4	0.2075	0.00	562	40
00331 − 0959	HD 2996	LSC 8	2608	10.7171	19.2	0.2729	3.68	692	40
				10.7171	17.5	0.2718	4.16	880	50
				11.6892	18.4	0.2669	4.34	692	40
				11.6892	18.4	0.2713	4.18	880	50
00342 + 3139	HD 3081	HDS 75	2694	11.6947	251.6	0.1232	0.85	692	40
				11.6947	251.8	0.1224	0.86	880	50
00344 + 6645	HD 3083	HDS 76	2707	10.8155	41.0	0.1146	1.32	692	40
				10.8155	41.0	0.1132	1.31	880	50
				11.6919	40.5	0.1199	1.39	692	40
				11.6919	40.9	0.1193	1.26	880	50
00352 − 0336	ADS 490	HO 212AB	2762	10.7171	250.1	0.2736	1.16	692	40
				10.7171	249.6	0.2726	1.11	880	50
00356 + 8338	HD 2972	MLR 481	2794	10.8155	36.0	0.4247	0.87	692	40
				10.8155	36.0	0.4246	0.77	880	50
				11.6919	35.9	0.4260	1.03	692	40
				11.6919	36.2	0.4243	1.00	880	50
00373 − 2446	HR 159	YSC 170	2941	11.6837	103.1	0.6559	0.80	692	40
				11.6837	103.1	0.6560	0.60	880	50
				11.9430	103.3	0.6723	0.73	692	40
				11.9430	103.5	0.6712	0.80	562	40
				11.9431	103.3	0.6746	0.63	692	40
				11.9431	103.4	0.6726	0.89	562	40
00378 + 0224	BD+01 105	HDS 88	2970	10.7116	294.3	0.5878	1.81	692	40
				10.7116	294.2	0.5872	2.04	562	40
				11.9431	293.7	0.5895	1.86	692	40
				11.9431	293.8	0.5868	1.98	562	40
00382 − 2216	HD 3540	HDS 89	3003	10.7172	202.2	0.4719	1.28	692	40
				10.7172	202.0	0.4717	0.98	880	50
				11.6838	200.8	0.4723	1.34	692	40
				11.6838	200.9	0.4725	1.10	880	50
00388 + 0342	...	HDS 90	3061	10.7116	319.6	0.7751	0.63	692	40
				10.7116	319.7	0.7734	0.25	562	40
				11.6865	319.6	0.7730	0.58	692	40
				11.6865	319.7	0.7728	0.33	880	50

Table 2—Continued

WDS (α,δ J2000.0)	HR,ADS HD, or DM	Discoverer Designation	HIP	Date (2000+)	θ (°)	ρ ($''$)	Δm	λ (nm)	$\Delta\lambda$ (nm)
00397 − 2135	HD 3693	HDS 91	3118	10.7172	215.3	0.2676	0.29	692	40
				10.7172	214.8	0.2671	0.00	880	50
				11.6838	215.7	0.2651	0.38	692	40
				11.6838	215.9	0.2653	0.25	880	50
00405 + 3627	HD 3742	COU 1051	3176	10.7144	89.3	0.4735	1.45	692	40
				10.7144	89.0	0.4720	1.54	562	40
00415 + 4319	BD+42 146	YSC 171	3258	10.7144	283.0	0.0166	1.97	692	40
				10.7144	296.3	0.0195	1.84	562	40
00415 − 0118	HD 3895	LSC 9	3264	11.6891	24.5	0.2655	3.59	692	40
				11.6891	23.4	0.2622	3.11	880	50
00423 + 0449	BD+04 98	HDS 92	3319	10.7116	164.5	0.1974	1.83	692	40
				10.7116	164.1	0.1980	1.93	562	40
				11.6947	162.4	0.1950	1.78	692	40
				11.6947	162.6	0.1932	1.72	880	50
				11.9431	161.7	0.1930	1.78	692	40
				11.9431	161.9	0.1916	1.83	562	40
00428 + 1249	BD+12 81	HDS 93	3361	10.7116	46.4	0.2853	1.32	692	40
				10.7116	46.3	0.2873	1.63	562	40
00446 − 1857	BD−19 111	HDS 99Aa,Ab	3493	11.6838	98.2	0.0706	0.34	692	40 [K]
				11.6838	97.2	0.0721	0.35	880	50 [K]
00463 − 0634	HD 4393	HDS 101	3612	10.7172	246.5	0.0276	1.43	692	40 [c]
				10.7172	237.8	0.0316	1.45	880	50 [c]
00467 − 0426	HD 4449	LSC 10Aa,Ab	3645	11.6865	159.8	0.0300	1.40	692	40
				11.6865	158.8	0.0272	0.78	880	50
				11.9432	139.9	0.0598	1.22	692	40
				11.9432	136.2	0.0598	1.41	562	40
00469 + 4339	BD+42 170	HDS 102	3669	10.7144	89.6	0.1339	1.16	692	40
				10.7144	89.2	0.1338	1.31	562	40
00495 + 4404	HD 4712	HDS 109	3857	10.7144	183.1	0.0703	2.01	692	40
				10.7144	182.8	0.0708	2.14	562	40
00516 + 4412	HD 4901	YR 19AB	...	11.6866	133.5	0.0970	0.81	692	40
				11.6866	133.6	0.0979	0.81	880	50
00518 + 7838	HD 4741	YR 5	4041	11.6919	243.3	0.1776	2.95	692	40
				11.6919	243.8	0.1766	2.27	880	50
00541 + 6626	HD 5110	YSC 19Aa,Ab	4239	10.7144	228.3	0.0254	0.78	692	40
				10.7144	219.9	0.0266	0.68	562	40
00541 + 6626	HD 5110	HDS 117 Aa,B	4239	10.7144	109.1	0.8755	3.57	692	40
				10.7144	109.0	0.8757	3.73	562	40
00542 − 1626	HD 5262	HDS 119	4247	10.7172	167.0	0.4370	4.10	692	40
				10.7172	166.8	0.4376	4.17	880	50
				11.6838	166.7	0.4362	3.98	692	40
				11.6838	167.4	0.4374	4.35	880	50
00552 + 4653	HD 5279	HDS 121	4306	11.6866	116.9	0.4053	3.23	692	40
				11.6866	116.7	0.4064	3.41	880	50
00568 + 6022	ADS 784	BU 1099AB	4440	10.7144	7.9	0.2485	0.44	692	40

Table 2—Continued

WDS (α,δ J2000.0)	HR,ADS HD, or DM	Discoverer Designation	HIP	Date (2000+)	θ (°)	ρ ($''$)	Δm	λ (nm)	$\Delta\lambda$ (nm)
				10.7144	7.9	0.2474	0.45	562	40
				10.8155	8.7	0.2469	0.42	692	40
				10.8155	8.9	0.2478	0.42	880	50
$00596-0112$	ADS 822	A 1903AB	4641	10.7171	16.8	0.3981	0.68	692	40
				10.7171	16.7	0.3989	0.73	880	50
				11.6865	18.5	0.4001	0.67	692	40
				11.6865	18.6	0.4002	0.65	880	50
$01002+1156$	HD 5843	YSC 172	4687	10.7116	126.9	0.0367	1.46	692	40
				10.7116	130.6	0.0330	1.24	562	40
$01005+1842$	HD 5883	HDS 132	4705	10.7116	134.9	0.4166	2.07	692	40
				10.7116	134.9	0.4175	2.02	562	40
				11.6892	134.6	0.4208	2.09	692	40
				11.6892	134.5	0.4203	2.13	880	50
				11.9432	134.1	0.4199	2.05	692	40
				11.9432	134.3	0.4177	2.02	562	40
$01017+0945$	HD 6030	LSC 12	4806	10.7172	225.0	1.0053	4.20	692	40
				10.7172	224.9	1.0045	3.95	880	50
				11.6947	225.6	1.0140	...	692	40
				11.6947	225.6	1.0174	...	880	50
$01024+0504$	HD 6101	HDS 135	4849	10.7172	89.0	0.6661	1.59	692	40 [K]
				10.7172	88.7	0.6639	1.18	880	50 [K]
$01051+1457$	ADS 889	YSC 124Aa,Ab	5081	10.7116	267.1	0.0289	0.79	692	40 [b,c]
				10.7116	92.2	0.0240	0.73	562	40 [c]
$01057+2128$	ADS 899	YR 6Aa,Ab	5131	10.7116	184.7	0.0319	0.91	692	40 [c]
				10.7116	191.8	0.0349	1.10	562	40 [c]
				11.6892	243.3	0.0336	0.69	692	40
				11.6892	240.0	0.0344	0.67	880	50
				11.9432	256.2	0.0380	0.81	692	40
				11.9432	260.5	0.0353	0.82	562	40
$01064+8005$	BD+79 26	MLR 445	5195	11.6866	341.0	0.2336	0.85	692	40 [b]
				11.6866	340.6	0.2335	0.73	880	50 [b]
				11.9403	340.0	0.2358	0.93	692	40 [b]
				11.9403	336.4	0.2343	1.26	562	40 [b]
$01071-0036$	HD 6639	HDS 144AB	5245	10.7172	170.4	0.2457	2.06	692	40
				10.7172	169.9	0.2463	1.68	880	50
$01071-0036$	HD 6639	BAG 12AC	5245	10.7172	158.2	1.3109	...	692	40
				10.7172	158.1	1.3155	...	880	50
$01077-1557$	HD 6708	HDS 148	5295	11.6838	25.4	0.1242	0.50	692	40
				11.6838	25.6	0.1269	0.43	880	50
$01084+1052$	HD 6760	LSC 13	5350	10.7172	298.3	0.1149	2.49	692	40
				10.7172	298.1	0.1110	2.35	880	50
				11.6947	311.4	0.1138	2.66	692	40
				11.6947	310.8	0.1121	2.33	880	50
$01088+3024$	HD 6785	HDS 149	5379	11.6838	180.7	0.3790	2.91	692	40
				11.6838	180.8	0.3792	2.67	880	50

Table 2—Continued

WDS (α,δ J2000.0)	HR,ADS HD, or DM	Discoverer Designation	HIP	Date (2000+)	θ (°)	ρ ($''$)	Δm	λ (nm)	$\Delta\lambda$ (nm)
				11.9402	180.8	0.3810	2.70	692	40
				11.9402	180.7	0.3808	2.90	562	40
01101 − 1425	HD 6978	HDS 153	5475	11.6838	222.9	0.0665	0.86	692	40
				11.6838	224.6	0.0650	0.90	880	50
01114 − 1935	HD 7135	YSC 81	5567	11.6892	36.9	0.0953	0.29	692	40 [b]
				11.6892	33.9	0.0951	0.23	880	50 [b]
01117 + 0835	HD 7128	HDS 158	5593	10.7172	134.7	0.3137	1.76	692	40
				10.7172	134.6	0.3133	1.65	880	50
				11.6947	135.2	0.3040	1.77	692	40
				11.6947	135.2	0.3025	1.59	880	50
				11.9433	132.1	0.2995	2.16	692	40
				11.9433	130.5	0.3005	2.35	562	40
01129 + 5136	HD 7169	HDS 160	5674	10.7198	80.9	0.1267	1.86	692	40
				10.7198	80.8	0.1281	1.92	562	40
01157 − 1825	HD 7594	HDS 164	5892	11.6892	141.1	0.8364	...	692	40
				11.6892	141.1	0.8393	...	880	50
01162 + 6608	HDS 168	HD 7443	5929	10.7144	40.5	0.3829	1.13	692	40
				10.7144	40.2	0.3830	1.26	562	40
01184 + 6333	HD 7709	HDS 171	6105	10.7198	88.2	0.9511	...	692	40
				10.7198	88.0	0.9543	...	562	40
01185 − 2511	CD−25 517	YSC 82	6111	11.6892	262.3	0.0900	0.61	692	40 [b]
				11.6892	264.0	0.0869	0.48	880	50 [b]
01197 + 0006	HD 8031	HDS 172	6217	10.7173	354.8	0.2488	1.68	692	40
				10.7173	354.6	0.2497	1.55	880	50
				11.9434	355.2	0.2509	1.67	692	40
				11.9434	355.6	0.2504	1.84	562	40
01197 + 1209	HD 8018	CHR 196	6216	11.9432	302.4	0.1007	0.44	692	40
				11.9432	302.0	0.0996	0.56	562	40
01204 − 2859	HD 8144	HDS 174	6267	11.6892	283.8	0.2894	3.47	692	40
				11.6892	283.0	0.2911	3.38	880	50
01217 − 0326	HD 8234	YR 21	6360	11.9434	60.0	0.0718	0.15	692	40
01234 + 5809	ADS 1105	STF 115AB	6486	10.7198	161.2	0.3434	0.31	692	40
				10.7198	161.1	0.3444	0.21	562	40
01238 + 0630	HD 8443	HDS 180	6521	10.7117	179.5	0.1906	1.42	692	40
				10.7117	179.4	0.1895	1.54	562	40
				11.6867	179.5	0.1873	1.50	692	40
				11.6867	179.4	0.1858	1.42	880	50
				11.9434	179.2	0.1827	1.51	692	40
				11.9434	180.1	0.1892	1.66	562	40
01244 + 3653	HD 8452	YSC 173Aa,Ab	6568	10.7200	113.1	0.0303	1.35	692	40
				10.7200	110.7	0.0296	1.20	562	40
01244 + 3653	HD 8452	HDS 181Aa,B	6568	10.7200	348.7	0.3038	1.76	692	40
				10.7200	348.6	0.3061	2.19	562	40
01260 + 1315	BD+12 176	HEI 305Aa,Ab	6694	10.7173	318.4	0.4670	0.19	692	40
				10.7173	138.5	0.4668	0.28	880	50

Table 2—Continued

WDS (α,δ J2000.0)	HR,ADS HD, or DM	Discoverer Designation	HIP	Date (2000+)	θ (°)	ρ ($''$)	Δm	λ (nm)	$\Delta\lambda$ (nm)
01267 + 1123	...	HDS 188	6730	10.7173	169.9	0.6718	0.38	692	40
				10.7173	169.8	0.6740	0.34	880	50
01281 + 4745	HD 8846	HDS 193	6850	10.7144	323.2	0.4228	2.19	692	40
				10.7144	323.2	0.4238	2.44	562	40
				11.6838	323.5	0.4263	2.22	692	40
				11.6838	323.3	0.4254	2.04	880	50
01285 + 0758	HD 8956	YR 7Ba,Bb	6873	10.7117	43.5	0.4727	3.03	692	40
				10.7117	43.3	0.4761	3.24	562	40
				11.6867	42.2	0.4782	2.99	692	40
				11.6867	42.3	0.4783	2.82	880	50
				11.9434	41.6	0.4782	2.99	692	40
				11.9434	41.6	0.4801	3.31	562	40
01297 + 2250	ADS 1183	A 1910AB	6966	10.7173	185.2	0.1789	0.53	692	40
				10.7173	185.3	0.1794	0.48	880	50
01325 + 7001	HD 9165	HDS 199	7182	11.6866	195.5	0.1552	1.36	692	40
				11.6866	196.3	0.1504	1.34	880	50
				11.9403	195.4	0.1483	1.09	692	40
				11.9403	197.2	0.1519	1.04	562	40
01336 + 3023	HD 9483	HDS 207	7269	11.6920	356.5	0.1181	2.02	692	40
				11.6920	358.4	0.1201	1.87	880	50
01345 + 7804	...	HDS 211Aa,Ab	7338	10.7145	217.9	0.2468	2.90	692	40
				10.7145	216.5	0.2512	3.23	562	40
				11.6866	211.0	0.2231	2.92	692	40
				11.6866	210.6	0.2252	2.12	880	50
01348 + 0635	HD 9648	YSC 141	7352	11.9434	191.7	0.2205	3.07	692	40
				11.9434	192.3	0.2185	3.42	562	40
01354 + 1126	...	HDS 213	7397	10.7173	185.4	0.2223	0.26	692	40
				10.7173	185.5	0.2243	0.40	880	50
01377 + 4825	HD 9901	HDS 215	7589	10.7144	223.0	0.6577	3.08	692	40
				10.7144	222.8	0.6556	3.28	562	40
				11.6838	224.3	0.6655	3.10	692	40
				11.6838	224.4	0.6648	2.92	880	50
01408 − 1259	BD−13 307	YSC 174	7836	11.9434	186.9	0.7811	4.21	692	40
				11.9434	187.0	0.7822	...	562	40
01417 − 1119	ADS 1339	STF 147	7916	11.9434	237.3	0.0766	1.15	692	40
				11.9434	235.9	0.0812	1.22	562	40
01428 − 2553	CD−26 605	HDS 226	8008	11.6893	217.5	0.6803	...	692	40 [b]
				11.6893	217.6	0.6820	...	880	50 [b]
01430 + 5807	HD 10387	MLR 630	8019	10.7198	210.9	0.3036	0.32	692	40
				10.7198	210.7	0.3037	0.29	562	40
01436 + 7741	BD+76 55	HDS 231	8065	10.7145	29.1	0.0648	1.45	692	40
				10.7145	202.9	0.0679	1.97	562	40 [b]
				11.6839	12.4	0.0830	1.48	692	40
				11.6839	15.9	0.0771	1.24	880	50
01437 + 0127	BD+00 277	LSC 15	8077	10.7173	76.5	0.1164	0.98	692	40

Table 2—Continued

WDS (α,δ J2000.0)	HR,ADS HD, or DM	Discoverer Designation	HIP	Date (2000+)	θ (°)	ρ ($''$)	Δm	λ (nm)	$\Delta\lambda$ (nm)
				10.7173	76.6	0.1192	1.11	880	50
$01465-2936$	CD−30 607	HDS 236	8270	10.7117	53.4	1.0079	...	692	40
				10.7117	53.0	1.0055	...	562	40
$01473+0659$	BD+06 271	OCC 46	8319	10.7174	215.0	0.0435	1.97	692	40
				10.7174	30.9	0.0498	2.41	880	50 [b]
$01483+5921$	BD+58 301	HDS 241	8396	10.7198	198.0	0.6304	3.06	692	40
				10.7198	198.2	0.6273	3.53	562	40
$01490-1746$	HD 11123	LSC 16	8455	11.6893	255.9	0.1055	1.24	692	40
				11.6893	256.5	0.1015	1.16	880	50
				11.9434	255.4	0.1026	1.34	692	40
				11.9434	254.8	0.1028	1.42	562	40
$01492+2443$	HD 11060	LSC 17	8466	10.7173	39.4	0.9507	2.82	692	40
				10.7173	39.0	0.9507	2.35	880	50
				11.6920	39.2	0.9529	...	692	40
				11.6920	39.4	0.9525	...	880	50
$01500+7456$	...	BAG 16AB	8533	10.7145	218.9	0.1279	1.03	692	40
				10.7145	217.2	0.1334	1.14	562	40
				11.6839	220.9	0.1301	0.96	692	40
				11.6839	221.0	0.1293	0.98	880	50
$01508+4024$	HD 11189	HDS 248	8584	10.7200	22.5	0.2991	2.50	692	40
				10.7200	22.9	0.2988	2.96	562	40
				11.6866	22.1	0.2974	2.57	692	40
				11.6866	22.4	0.2987	2.36	880	50
$01511+0644$	HD 11310	HDS 250	8617	10.7174	21.5	0.5555	3.00	692	40
				10.7174	21.4	0.5551	3.12	880	50
$01512+2439$	ADS 1473	HO 311	8622	11.6920	174.5	0.3708	0.54	692	40
				11.6920	174.7	0.3697	0.72	880	50
$01518+1817$	HD 11326	COU 2557	8689	11.9404	259.1	1.2086	...	692	40
				11.9404	259.5	1.2078	...	562	40
$01572+7144$	HD 11609	HDS 264	9097	10.7145	273.5	0.5563	3.21	692	40
				10.7145	274.4	0.5585	3.38	562	40
				11.6839	272.2	0.5560	3.61	692	40
				11.6839	272.5	0.5576	2.96	880	50
$01581-0418$	HD 12037	HDS 265	9177	11.9405	103.8	0.6351	3.13	692	40
				11.9405	103.2	0.6336	3.66	562	40
$02008+5958$	HD 12112	HDS 269	9403	11.9434	228.6	0.1260	2.44	692	40
				11.9434	229.0	0.1313	3.10	562	40
$02010+7326$	HD 11958	HDS 270	9419	10.7145	210.2	0.3420	3.69	692	40
				10.7145	211.3	0.3381	3.57	562	40
				11.6839	208.8	0.3280	3.95	692	40
				11.6839	209.3	0.3294	4.08	880	50
$02020+7054$	ADS 1598	BU 513AB	9480	10.7145	302.6	0.6473	2.24	692	40
				10.7145	302.4	0.6466	2.23	562	40
				11.6839	307.2	0.6274	1.87	692	40
				11.6839	307.2	0.6267	1.65	880	50

Table 2—Continued

WDS (α,δ J2000.0)	HR,ADS HD, or DM	Discoverer Designation	HIP	Date (2000+)	θ (°)	ρ ($''$)	Δm	λ (nm)	$\Delta\lambda$ (nm)
02022 + 3643	ADS 1613	A 1813AB	9500	10.7200	176.4	0.1618	0.20	692	40
				10.7200	200.1	1.6067	...	692	40
				10.7200	176.4	0.1615	0.40	562	40
				10.7200	200.0	1.6063	...	562	40
02027 − 0137	HD 12514	YSC 86	9545	10.7117	88.1	0.7020	3.36	692	40
				10.7117	88.1	0.7025	3.81	562	40
				11.9405	87.5	0.7078	3.60	562	40
02038 − 0020	HD 12641	TOK 38Aa,Ab	9631	11.9405	235.1	0.0254	1.64	692	40
				11.9405	233.9	0.0286	1.55	562	40
02051 + 7717	HR 581	LSC 19Aa,Ab	9727	11.6839	124.0	0.1056	1.99	692	40
				11.6839	123.1	0.1069	1.86	880	50
02057 − 2423	ADS 1652	I 454Aa,B	9774	10.7174	155.5	0.7885	1.66	692	40
				10.7174	155.2	0.7858	1.22	880	50
02057 − 2423	ADS 1652	WSI 71Aa,Ab	9774	10.7174	284.5	0.0280	0.03	692	40
				10.7174	297.4	0.0306	0.05	880	50
02070 − 0413	HD 12984	HDS 283	9874	10.7117	268.0	0.9124	...	692	40
				10.7117	268.1	0.9107	...	562	40
02085 + 5852	HD 12928	HDS 284	9980	10.7145	78.7	0.2418	0.26	692	40
				10.7145	78.3	0.2415	0.02	562	40
				11.6839	78.4	0.2426	0.27	692	40
				11.6839	78.5	0.2427	0.15	880	50
				11.9434	78.1	0.2430	0.16	692	40
				11.9434	78.1	0.2430	0.35	562	40
02085 − 0641	HD 13155	HDS 285	9981	10.8101	100.1	0.2421	3.09	692	40
				10.8101	100.3	0.2432	3.33	880	50
				11.9405	100.4	0.2355	3.19	692	40
				11.9405	98.3	0.2350	2.83	562	40
02094 − 2231	CD−23 801	HDS 288	10057	10.7174	96.5	0.3582	2.00	692	40
				10.7174	95.6	0.3523	1.46	880	50
02109 + 2348	HD 13344	HDS 292	10181	10.7174	175.1	0.2091	2.79	692	40
				10.7174	175.2	0.2112	2.66	880	50
02142 + 0909	...	HDS 297	10414	10.8100	46.9	0.3797	1.73	692	40
				10.8100	46.3	0.3788	1.42	880	50
02145 + 6631	HD 13474	MCA 6	10438	11.6949	133.9	0.1058	1.62	692	40
				11.6949	133.5	0.1052	1.99	880	50
02157 + 2503	HR 657	COU 79	10535	10.7174	61.3	0.1021	0.10	692	40
				10.7174	61.0	0.1019	0.30	880	50
				11.6893	232.5	0.1594	0.46	692	40 [b]
				11.6893	232.6	0.1594	0.40	880	50 [b]
02164 + 0438	HD 14031	YR 8	10596	10.7117	160.4	0.0744	0.68	692	40
				10.7117	160.2	0.0772	0.91	562	40
				11.9405	337.3	0.0866	0.80	692	40
				11.9405	333.3	0.0824	0.97	562	40
02167 + 0632	HD 14070	YSC 20	10616	10.8100	87.2	0.0691	2.53	692	40
				10.8100	87.6	0.0677	1.93	880	50

Table 2—Continued

WDS (α,δ J2000.0)	HR,ADS HD, or DM	Discoverer Designation	HIP	Date (2000+)	θ (°)	ρ ($\prime\prime$)	Δm	λ (nm)	$\Delta\lambda$ (nm)
02171 + 5839	BD+57 530	YSC 87Ba,Bb	10653	10.7145	200.0	0.6291	3.84	692	40
				10.7145	200.5	0.6237	4.00	562	40
				11.6839	198.9	0.6384	3.91	692	40
				11.6839	198.9	0.6365	2.82	880	50
				11.9434	198.0	0.6417	3.77	692	40
				11.9434	198.5	0.6385	4.17	562	40
02172 + 5838	HD 13865	HDS 302Aa,Ab	10660	10.7145	245.3	0.3816	2.77	692	40
				10.7145	244.2	0.3830	3.12	562	40
				11.9435	243.3	0.3976	2.80	692	40
				11.9435	243.7	0.3998	3.16	562	40
02186 + 4017	ADS 1763	EGG 2Aa,Ab	10772	10.7200	23.8	0.1036	1.01	692	40
				10.7200	23.4	0.1035	1.05	562	40
				10.8156	25.2	0.1028	1.02	692	40
				10.8156	25.2	0.1009	1.04	880	50
				11.6893	36.9	0.0920	1.13	692	40
				11.6893	36.2	0.0912	1.14	880	50
02216 − 1546	HD 14665	HDS 307	10990	11.6839	257.0	0.5461	2.71	692	40
				11.6839	257.0	0.5478	2.61	880	50
				11.9405	256.2	0.5476	2.59	692	40
				11.9405	255.5	0.5491	2.59	562	40
02180 − 2416	HR 695	LAF 27	11072	10.7174	315.6	0.4737	4.54	692	40
				10.7174	315.3	0.4725	3.53	880	50
				12.0989	332.3	0.4035	4.16	692	40
				12.0989	332.2	0.3977	3.37	880	50
02243 + 3950	HD 14807	HDS 312	11206	10.7200	340.4	0.0847	2.54	692	40
				10.7200	339.0	0.0871	2.54	562	40
02254 + 0135	HD 15030	HDS 315	11286	10.8101	327.7	0.1622	2.62	692	40
				10.8101	327.1	0.1614	2.49	880	50
02262 + 3428	HD 15013	HDS 318	11352	10.7200	156.4	0.0876	0.20	692	40
				10.7200	156.4	0.0885	0.05	562	40
02267 − 2906	HD 15261	HDS 320	11383	10.7174	239.5	0.2901	2.20	692	40
				10.7174	238.5	0.2887	1.99	880	50
				11.9435	233.7	0.3364	2.10	692	40
02280 + 5057	HD 15150	HDS 322	11478	10.7145	330.9	0.3351	3.01	692	40
				10.7145	330.9	0.3347	3.07	562	40
				11.6839	330.3	0.3353	3.04	692	40
				11.6839	330.3	0.3336	2.87	880	50
				11.9435	329.8	0.3347	3.06	692	40
				11.9435	330.2	0.3368	3.29	562	40
02286 + 6311	HD 15102	LSC 21	11527	11.6949	10.9	0.1050	0.65	692	40
				11.6949	10.6	0.1053	0.51	880	50
02302 − 2511	HD 15634	HDS 325	11644	10.7174	75.4	0.6124	2.43	692	40
				10.7174	74.8	0.6109	2.18	880	50
				11.9435	74.2	0.6250	2.53	692	40
				11.9435	74.8	0.6217	2.84	562	40

Table 2—Continued

WDS (α,δ J2000.0)	HR,ADS HD, or DM	Discoverer Designation	HIP	Date (2000+)	θ (°)	ρ ($\prime\prime$)	Δm	λ (nm)	$\Delta\lambda$ (nm)
				12.0989	74.9	0.6204	2.48	692	40
				12.0989	74.6	0.6184	2.40	880	50
02313 + 4624	HD 15510	COU 1676	11719	10.7145	233.0	0.8334	2.92	692	40
				10.7145	232.7	0.8318	...	562	40
				11.6949	232.6	0.8379	...	692	40
				11.6949	232.7	0.8374	...	880	50
				12.0962	233.0	0.8311	2.96	692	40
				12.0962	232.7	0.8303	2.69	880	50
02314 + 5559	HD 15461	HDS 329	11730	10.7145	137.1	0.3637	2.01	692	40
				10.7145	136.9	0.3617	2.30	562	40
				11.9435	136.7	0.3601	1.97	692	40
				11.9435	137.0	0.3579	2.28	562	40
				12.0962	137.7	0.3578	1.98	692	40
				12.0962	137.7	0.3569	1.80	880	50
02322 + 0901	BD+08 390	HDS 331	11793	10.8100	329.3	0.6800	1.42	692	40
				10.8100	329.3	0.6800	1.21	880	50
02332 + 4149	HD 15754	HDS 332	11871	10.7145	284.6	0.8140	3.88	692	40
				10.7145	283.7	0.8164	5.61	562	40
				11.6949	284.8	0.8160	...	692	40
				11.6949	284.9	0.8174	...	880	50
				12.0962	285.3	0.8014	3.94	692	40
				12.0962	285.3	0.7996	3.74	880	50
02340 − 1257	HD 16006	HDS 335	11931	11.6839	169.5	0.1981	1.60	692	40
				11.6839	169.4	0.1972	1.74	880	50
				11.9405	169.1	0.1945	1.59	692	40
				11.9405	350.8	0.1950	1.97	562	40 [b]
				12.0935	170.3	0.1966	1.59	692	40
				12.0935	170.5	0.1991	1.83	880	50
02366 − 1439	HD 16295	HDS 339	12146	12.0935	45.7	0.8029	...	692	40
				12.0935	45.5	0.8056	...	880	50
02366 + 1227	HR 763	MCA 7	12153	10.7175	123.7	0.0555	0.19	692	40 [c]
				10.7175	303.6	0.0545	0.22	880	50 [b,c]
				12.0962	147.0	0.0723	0.27	692	40
				12.0962	147.5	0.0717	0.26	880	50
02371 − 0600	BD−06 509	HDS 340	12195	12.0935	169.5	0.2638	0.32	692	40
				12.0935	169.6	0.2642	0.42	880	50
02378 + 2308	HD 16312	HDS 342	12257	10.7118	139.6	0.1284	0.00	692	40
				10.7118	139.7	0.1262	0.04	562	40
				12.0935	154.0	0.1130	0.19	692	40
				12.0935	154.1	0.1130	0.16	880	50
02379 + 3855	HD 16284	HDS 343	12265	10.7200	351.4	1.0763	...	692	40
				10.7200	351.3	1.0808	...	562	40
				11.6893	351.4	1.0874	...	692	40
				11.6893	351.4	1.0836	...	880	50
				12.1045	352.4	1.0747	...	692	40

Table 2—Continued

WDS (α,δ J2000.0)	HR,ADS HD, or DM	Discoverer Designation	HIP	Date (2000+)	θ (°)	ρ ($''$)	Δm	λ (nm)	$\Delta\lambda$ (nm)
				12.1045	352.4	1.0796	...	880	50
02396 − 1152	HR 781	FIN 312	12390	11.6840	20.3	0.0981	0.78	692	40
				11.6840	20.2	0.0979	0.69	880	50
				11.9405	238.0	0.0889	0.82	692	40 [b]
				11.9405	58.9	0.0862	1.11	562	40
				12.0935	85.3	0.0848	0.85	692	40
				12.0935	85.4	0.0814	0.70	880	50
02397 − 2026	HD 16649	HDS 346	12399	10.7174	217.7	0.7518	3.87	692	40
				10.7174	217.4	0.7502	3.98	880	50
				12.0989	218.8	0.7518	3.95	692	40
				12.0989	218.1	0.7576	3.82	880	50
02399 + 0009	ADS 2028	A 1928	12421	10.8101	127.9	0.0782	1.18	692	40
				10.8101	127.6	0.0788	1.18	880	50
				12.0990	171.8	0.0992	1.25	692	40
				12.0990	171.3	0.0964	1.17	880	50
02399 + 3403	HD 16501	YR 22	...	11.6839	286.9	0.5683	3.64	692	40
				11.6839	286.8	0.5684	3.36	880	50
				12.1045	287.5	0.5626	3.70	692	40
				12.1045	287.3	0.5613	3.17	880	50
02402 + 0436	...	HDS 347	12446	10.8101	314.8	0.5262	0.12	692	40
				10.8101	314.8	0.5258	0.17	880	50
				12.0990	316.9	0.5364	0.38	692	40
				12.0990	317.1	0.5353	0.27	880	50
02415 − 1506	HD 16826	HDS 351	12554	12.0989	203.5	0.2694	1.16	692	40
				12.0989	204.0	0.2657	0.97	880	50
02422 + 4012	HR 788	MCA 8	12623	10.7145	15.2	0.0472	0.44	692	40
				10.7145	15.6	0.0478	0.43	562	40
				10.7200	14.7	0.0494	0.46	692	40
				10.7200	14.2	0.0490	0.46	562	40
				10.8156	355.6	0.0519	0.44	692	40
				10.8156	355.9	0.0523	0.47	880	50
				11.6949	0.2	0.0508	0.41	692	40
				11.6949	0.9	0.0511	0.39	880	50
				11.9435	315.6	0.0520	0.46	692	40
				11.9435	316.0	0.0508	0.51	562	40
				12.1045	286.6	0.0512	0.44	692	40
				12.1045	285.7	0.0509	0.40	880	50
02424 + 2001	ADS 2062	BLA 1Aa,Ab	12640	10.7118	311.0	0.0346	0.92	692	40 [c]
				10.7118	316.3	0.0366	0.63	562	40 [c]
02431 + 2700	HD 16869	HDS 355	12696	12.0935	257.4	0.4153	2.30	692	40
				12.0935	257.3	0.4154	2.09	880	50
02438 + 1606	HD 16983	HEI 23	12742	10.7118	339.8	1.0081	2.57	692	40
				10.7118	339.7	1.0103	2.63	562	40
				12.0962	340.6	0.9964	2.55	692	40
				12.0962	340.7	0.9967	2.37	880	50

Table 2—Continued

WDS (α,δ J2000.0)	HR,ADS HD, or DM	Discoverer Designation	HIP	Date (2000+)	θ (°)	ρ ($''$)	Δm	λ (nm)	$\Delta\lambda$ (nm)
02449 + 1007	HD 17094	TOK 1Aa,Ab	12828	10.8100	162.9	0.0867	3.32	692	40
				10.8100	164.0	0.0905	3.06	880	50
02460 + 4037	HD 17102	HDS 359	12911	10.7146	287.9	0.0901	2.01	692	40
				10.7146	287.8	0.0901	2.24	562	40
				10.7200	287.7	0.0878	1.76	692	40
				10.7200	288.5	0.0888	2.25	562	40
				11.6893	301.0	0.0775	1.65	692	40
				11.6893	301.1	0.0802	1.48	880	50
				11.9435	305.3	0.0750	2.02	692	40
				11.9435	302.6	0.0855	2.69	562	40
02463 + 1500	HD 17229	LSC 22	12928	10.7118	294.1	0.4720	3.02	692	40
				10.7118	293.5	0.4747	3.35	562	40
02470 + 0745	...	HDS 361	12986	10.7119	340.1	0.3105	1.75	692	40
				10.7119	340.0	0.3124	1.94	562	40
				12.0963	341.9	0.3090	1.64	692	40
				12.0963	342.4	0.3093	1.17	880	50
02478 + 3930	HD 17292	HDS 363	13057	10.7146	44.6	0.0622	0.63	692	40
				10.7146	44.4	0.0637	0.61	562	40
				10.7200	45.2	0.0643	0.53	692	40
				10.7200	44.9	0.0647	0.66	562	40
				11.6949	43.7	0.0706	0.65	692	40
				11.6949	44.1	0.0673	0.59	880	50
				11.9435	42.5	0.0709	0.67	692	40
				11.9435	37.8	0.0681	0.59	562	40
02540 + 1601	HD 17996	HDS 370	13509	10.7119	52.0	0.1899	2.72	692	40
				10.7119	52.9	0.1884	2.28	562	40
				12.0963	52.8	0.1793	2.59	692	40
				12.0963	52.2	0.1854	2.58	880	50
02544 − 2007	HD 18165	HDS 371	13542	12.0990	65.6	0.1550	2.06	692	40
				12.0990	64.6	0.1541	1.70	880	50
02549 − 1401	HD 18183	HDS 372Aa,Ab	13578	12.0935	152.9	0.2801	3.22	692	40
				12.0935	152.9	0.2825	3.06	880	50
02552 + 5950	HD 17911	MLR 520	13597	10.7201	67.3	0.1035	0.14	692	40
				10.7201	67.1	0.1037	0.24	562	40
				11.6949	62.3	0.1119	0.37	692	40
				11.6949	62.4	0.1117	0.29	880	50
02554 − 2513	CD−25 1159	HDS 375	13610	10.7175	55.6	0.6146	0.96	692	40
				10.7175	55.3	0.6119	0.60	880	50
				11.9435	52.9	0.5957	0.71	692	40
02563 + 7512	HD 17705	YSC 88	13683	10.7146	240.6	0.1390	2.42	692	40
				10.7146	240.6	0.1354	2.33	562	40
				11.6949	235.6	0.1607	2.46	692	40
				11.6949	235.4	0.1614	2.30	880	50
				12.1044	234.7	0.1634	2.40	692	40
				12.1044	233.9	0.1655	2.22	880	50

Table 2—Continued

WDS (α,δ J2000.0)	HR,ADS HD, or DM	Discoverer Designation	HIP	Date (2000+)	θ (°)	ρ ($''$)	Δm	λ (nm)	$\Delta\lambda$ (nm)
02584 + 1914	BD+18 382	YR 9	13855	12.0990	241.9	0.5935	3.42	692	40
				12.0990	241.7	0.5913	2.93	880	50
02597 + 0938	HD 18596	HDS 381	13950	10.7175	146.5	0.3946	3.40	692	40
				10.7175	146.3	0.3919	3.50	880	50
				11.6840	146.6	0.3895	3.50	692	40
				11.6840	146.6	0.3880	3.44	880	50
				12.0991	147.6	0.3848	3.45	692	40
				12.0991	147.9	0.3858	3.58	880	50
03007 + 4650	BD+46 670	HDS 383	14034	10.7146	147.2	0.1545	0.20	692	40
				10.7146	147.2	0.1551	0.12	562	40
				10.7201	147.1	0.1541	0.22	692	40
				10.7201	146.8	0.1543	0.29	562	40
				11.6920	147.0	0.1504	0.33	692	40
				11.6920	146.8	0.1511	0.31	880	50
				11.9406	326.9	0.1484	0.37	692	40
				11.9406	327.4	0.1468	0.22	562	40
03014 + 0615	HD 18774	HDS 385	14075	11.6840	291.8	0.0627	0.16	692	40
				11.6840	291.7	0.0632	0.15	880	50
03019 − 1636	...	RST 2292BC	14101	12.0963	141.8	0.1812	2.16	692	40
				12.0963	140.0	0.1777	1.80	880	50
03020 − 1812	HD 18921	YSC 175	14117	12.0963	275.3	0.0564	2.05	692	40
				12.0963	280.3	0.0658	2.33	880	50
03022 − 0630	HD 18894	YSC 126	14124	11.6840	345.3	0.0199	1.26	692	40 [b]
				11.6840	158.8	0.0168	0.02	880	50
				12.0963	141.0	0.0351	1.32	692	40
				12.0963	320.2	0.0308	1.08	880	50 [b]
03035 + 2304	HD 18940	HDS 389AB	14230	12.0990	352.2	0.0920	1.79	692	40
				12.0990	353.0	0.0813	1.43	880	50
03053 + 1019	BD+09 393	HDS 390	14360	12.0991	96.7	0.3750	1.42	692	40
				12.0991	96.7	0.3741	1.74	880	50
03059 + 7036	BD+70 221	HDS 394	14410	10.7146	88.7	0.5639	1.30	692	40
				10.7146	88.1	0.5634	1.47	562	40
				11.6949	89.3	0.5657	1.44	692	40
				11.6949	89.6	0.5667	1.32	880	50
				12.1045	89.8	0.5570	1.31	692	40
				12.1045	89.8	0.5536	1.17	880	50
03076 − 0358	...	HDS 396	14524	11.6840	108.2	0.3062	0.43	692	40
				11.6840	108.1	0.3067	0.23	880	50
				12.0963	106.3	0.2999	0.01	692	40
				12.0963	106.3	0.2986	0.11	880	50
03095 + 4544	...	HDS 404	14669	10.7146	188.0	0.3393	2.02	692	40
				10.7146	188.2	0.3407	2.25	562	40
				11.6920	181.7	0.2452	2.13	692	40
				11.6920	181.8	0.2446	1.58	880	50
03119 + 6131	BD+60 637	HDS 407	14864	10.7201	177.7	0.5540	1.95	692	40

Table 2—Continued

WDS (α,δ J2000.0)	HR,ADS HD, or DM	Discoverer Designation	HIP	Date (2000+)	θ (°)	ρ ($''$)	Δm	λ (nm)	$\Delta\lambda$ (nm)
				10.7201	177.6	0.5571	2.17	562	40
				11.6867	181.4	0.5399	1.91	692	40
				11.6867	181.6	0.5384	1.33	880	50
03125 + 1857	HD 19895	HDS 408	14929	10.7175	348.3	0.0938	0.26	692	40
				10.7175	347.7	0.0954	0.28	880	50
				12.0990	341.4	0.0787	0.22	692	40
				12.0990	342.0	0.0784	0.11	880	50
03151 + 1618	ADS 2429	HU 1055AB	15134	12.0991	119.6	0.4813	0.84	692	40
				12.0991	119.7	0.4798	0.73	880	50
03155 − 1633	HD 20544	YSC 176	15172	12.0963	273.2	0.7612	4.57	692	40
				12.0963	273.2	0.7560	4.00	880	50
03161 − 1921	HD 20375	LSC 24	15210	12.0963	315.2	0.0912	0.80	692	40
				12.0963	314.9	0.0908	0.75	880	50
03181 + 0803	...	HDS 414	15368	12.0991	309.7	0.8856	1.09	692	40
				12.0991	309.8	0.8821	1.05	880	50
03203 + 1625	BD+15 469	SLE 42	15546	10.7175	231.8	0.0165	0.63	692	40 [a]
				10.7175	49.5	0.0127	0.94	880	50 [a]
03208 + 2311	HD 20697	OCC 771	15586	10.7175	65.7	0.6162	3.72	692	40
				10.7175	65.1	0.6113	3.41	880	50
03209 + 2031	HD 20716	HDS 418	15597	10.7175	341.3	0.5851	4.34	692	40
				10.7175	341.4	0.5818	4.39	880	50
				12.0991	342.2	0.5790	4.46	692	40
				12.0991	342.3	0.5808	4.56	880	50
03213 + 1038	HD 20779	HEI 449	15633	10.7120	62.3	0.2526	0.26	692	40
				10.7120	61.8	0.2516	0.39	562	40
				12.0991	61.0	0.2693	0.17	692	40
				12.0991	60.7	0.2685	0.36	880	50
03221 + 4440	BD+44 679	COU 1681	15688	10.7147	272.2	0.1007	0.74	692	40
				10.7147	271.6	0.1011	0.79	562	40
				10.8157	270.5	0.1001	0.71	692	40
				10.8157	269.8	0.0999	0.63	880	50
				11.6921	255.3	0.1032	0.76	692	40
				11.6921	253.7	0.1042	0.79	880	50
				11.9406	249.9	0.1039	0.70	692	40
				11.9406	250.5	0.1032	0.83	562	40
03227 − 2714	HD 21042	HDS 422	15736	12.0936	231.1	0.2230	2.72	692	40
				12.0936	230.3	0.2275	3.00	880	50
03228 + 2045	HD 20893	HDS 423	15737	10.7175	294.4	0.3592	3.81	692	40
				10.7175	294.6	0.3612	4.16	880	50
				12.0991	295.4	0.3393	3.86	692	40
				12.0991	296.0	0.3317	4.01	880	50
03234 + 3059	HD 20905	YSC 177	15781	10.8100	317.3	0.5697	5.14	692	40
				10.8100	317.0	0.5654	5.65	880	50
03240 + 1028	BD+09 433	LSC 25	15837	10.7120	285.4	0.6291	3.99	692	40
				10.7120	285.1	0.6286	4.33	562	40

Table 2—Continued

WDS (α,δ J2000.0)	HR,ADS HD, or DM	Discoverer Designation	HIP	Date (2000+)	θ (°)	ρ ($\prime\prime$)	Δm	λ (nm)	$\Delta\lambda$ (nm)
$03264+3520$	HD 21183	HDS 430	16025	10.7201	278.8	0.2180	1.54	692	40
				10.7201	278.3	0.2174	1.73	562	40
$03266+2843$	HD 21242	CHR 9Aa,Ab	16042	10.8100	55.0	0.3560	3.23	692	40
				10.8100	55.2	0.3565	3.33	880	50
$03282+3249$	HD 21403	LSC 26	16154	10.7201	263.0	0.1802	3.08	692	40
				10.7201	262.1	0.1793	2.95	562	40
$03285+5740$	HD 21248	HDS 435	16185	10.7147	263.2	0.0441	0.00	692	40
				10.7147	265.7	0.0435	0.00	562	40
				11.6867	98.1	0.0565	0.08	692	40 [b]
				11.6867	97.5	0.0564	0.07	880	50 [b]
				11.9406	280.4	0.0580	0.00	692	40
				11.9406	279.5	0.0585	0.31	562	40
$03301+1123$	HD 21664	HDS 437	16296	12.0991	3.4	1.1258	2.78	692	40
				12.0991	3.4	1.1276	2.54	880	50
$03303+1254$	HD 21675	HDS 438	16314	12.0991	166.4	0.3740	3.08	692	40
				12.0991	166.5	0.3739	3.14	880	50
$03307-1926$	HD 21841	HDS 441	16348	12.1017	185.6	0.1864	0.22	692	40
				12.1017	185.7	0.1875	0.30	880	50
$03309+4359$	HD 21588	LSC 27	16367	10.7147	266.1	0.3479	3.01	692	40
				10.7147	265.9	0.3456	3.60	562	40
				11.6893	265.4	0.3478	3.13	692	40
				11.6893	265.8	0.3479	2.76	880	50
				11.9406	264.7	0.3433	3.13	692	40
				11.9406	265.5	0.3478	3.49	562	40
$03311-0029$	HD 21822	HDS 444	16389	12.1017	198.1	0.1093	0.59	692	40
				12.1017	198.2	0.1077	0.59	880	50
$03311+1544$	BD+15 496	HDS 443	16393	10.7120	221.2	0.4102	2.79	692	40
				10.7120	220.7	0.4118	2.92	562	40
				12.0991	221.3	0.4105	2.75	692	40
				12.0991	221.3	0.4108	2.64	880	50
$03320+6735$	HD 21476	YSC 143Aa,Ab	16459	10.7201	80.4	0.2246	2.11	692	40
				10.7201	80.7	0.2243	2.28	562	40
				11.6867	81.2	0.2303	2.07	692	40
				11.6867	81.3	0.2301	1.99	880	50
				11.9407	80.2	0.2313	2.12	692	40
				11.9407	80.3	0.2322	2.32	562	40
$03322+4245$	HD 21751	HDS 446	16473	10.7147	303.9	0.0708	0.09	692	40
				10.7147	303.9	0.0709	0.00	562	40
				11.6893	298.1	0.0674	0.25	692	40
				11.6893	297.8	0.0675	0.00	880	50
$03324+1222$	HD 21914	HDS 448	16497	10.7120	294.9	0.3465	2.05	692	40
				10.7120	294.7	0.3467	2.40	562	40
				12.0991	296.3	0.3444	1.98	692	40
				12.0991	296.4	0.3439	1.84	880	50
$03350+2919$	HD 22125	LSC 28	16705	10.8100	103.4	0.1228	0.25	692	40 [b]

Table 2—Continued

WDS (α,δ J2000.0)	HR,ADS HD, or DM	Discoverer Designation	HIP	Date (2000+)	θ (°)	ρ ($''$)	Δm	λ (nm)	$\Delta\lambda$ (nm)
				10.8100	103.2	0.1231	0.34	880	50 [b]
03356 + 8624	BD+85 53	HDS 454	16754	11.6949	27.8	0.6200	...	692	40
				11.6949	28.2	0.6134	...	880	50
03360 + 0846	...	YSC 144AB	16786	10.7120	162.6	0.4014	2.11	692	40
				10.7120	161.9	0.4018	2.31	562	40
03363 − 1728	HR 1100	HDS 456	16803	12.0963	68.5	0.1616	1.35	692	40
				12.0963	68.2	0.1607	1.14	880	50
				12.1017	68.8	0.1599	1.19	692	40
				12.1017	68.6	0.1591	1.20	880	50
03378 + 4046	HD 275604	COU 1517	16920	11.6894	253.6	0.2300	0.83	692	40
				11.6894	253.7	0.2303	0.90	880	50
03379 + 0538	HD 22556	YSC 27	16930	10.7175	85.9	0.1185	1.27	692	40
				10.7175	85.7	0.1187	1.20	880	50
				12.0990	51.2	0.0751	1.21	692	40
				12.0990	51.9	0.0770	1.09	880	50
03385 + 1336	BD+13 576	YR 10	16991	10.7120	76.8	0.3115	3.24	692	40
				10.7120	75.9	0.3086	3.67	562	40
				12.0991	78.0	0.3035	3.11	692	40
				12.0991	78.0	0.3026	2.73	880	50
03391 + 5249	HD 22451	YSC 127	17033	10.7147	12.5	0.0410	0.32	692	40 [c]
				10.7147	9.5	0.0408	0.23	562	40 [c]
				10.8156	9.7	0.0410	0.34	692	40 [c]
				10.8156	10.2	0.0398	0.01	880	50 [c]
				11.6868	325.8	0.0212	0.30	692	40
				11.6868	324.2	0.0206	0.03	880	50
03404 + 1144	BD+11 504	HEI 316	17149	12.0991	278.5	0.9018	1.57	692	40
				12.0991	278.5	0.8984	1.51	880	50
03404 + 2957	BD+29 590	HDS 465	17151	10.8100	242.8	0.0425	0.00	692	40 [c]
				10.8100	242.8	0.0427	0.33	880	50 [c]
				12.0935	28.8	0.0244	0.00	692	40
				12.0935	34.1	0.0256	0.07	880	50
03408 + 4151	HD 22721	HDS 467	17189	10.8157	337.1	0.5636	2.92	692	40
				10.8157	337.0	0.5618	2.65	880	50
				11.6894	335.5	0.5690	2.94	692	40
				11.6894	335.4	0.5655	2.71	880	50
03426 + 0838	HD 23083	HDS 472	17337	10.7175	244.1	0.5511	2.31	692	40
				10.7175	243.7	0.5479	2.12	880	50
03460 + 7302	HD 22811	MLR 457	17580	10.8157	4.5	0.9322	...	692	40
				10.8157	4.5	0.9292	...	880	50
03473 + 0607	BD+05 542	YSC 178	17680	12.0990	173.4	0.0542	1.51	692	40 [a]
				12.0990	352.0	0.0550	1.76	880	50 [a]
03496 − 0220	HD 24031	YR 23	17895	10.7120	320.3	0.3266	0.70	692	40
				10.7120	320.2	0.3274	0.91	562	40
				10.8185	319.7	0.3244	0.70	692	40
				10.8185	319.7	0.3243	0.53	880	50

Table 2—Continued

WDS (α,δ J2000.0)	HR,ADS HD, or DM	Discoverer Designation	HIP	Date (2000+)	θ (°)	ρ ($\prime\prime$)	Δm	λ (nm)	$\Delta\lambda$ (nm)
				11.6840	316.4	0.3314	0.58	692	40
				11.6840	316.4	0.3311	0.47	880	50
				12.0964	315.2	0.3313	0.94	692	40
				12.0964	315.3	0.3302	0.69	880	50
03496 + 6318	HR 1158	CAR 1	17891	10.7147	54.3	0.0979	0.47	692	40
				10.7147	53.7	0.0981	0.52	562	40
				12.1018	88.0	0.1101	0.44	692	40
				12.1018	87.9	0.1105	0.32	880	50
03499 + 4314	BD+42 828	COU 1691	17918	10.8157	320.1	0.3851	0.31	692	40
				10.8157	320.0	0.3842	0.14	880	50
				11.9406	319.4	0.3870	0.25	692	40
				11.9406	319.7	0.3855	0.49	562	40
03520 − 2457	HD 24404	HDS 482	18093	12.0936	54.2	0.2206	1.85	692	40
				12.0936	53.2	0.2212	1.69	880	50
03554 − 2134	HD 24753	HDS 493	18349	12.0963	165.0	0.7373	3.34	692	40
				12.0963	165.2	0.7438	3.24	880	50
03556 − 2613	HD 24798	HDS 495	18364	11.9436	117.8	0.1450	2.81	692	40
				11.9436	119.7	0.1464	3.14	562	40
				12.0936	114.7	0.1426	3.56	692	40
				12.0936	109.0	0.1404	3.41	880	50
03596 + 0436	HD 25113	YSC 21	18650	12.1017	286.6	0.1817	3.18	692	40
				12.1017	284.5	0.1826	2.78	880	50
04008 + 1033	HD 286459	HDS 506	18736	11.6894	174.0	0.6522	2.07	692	40
				11.6894	174.1	0.6494	2.19	880	50
				11.9407	173.8	0.6437	2.01	692	40
				11.9407	173.9	0.6428	2.35	562	40
				12.0991	175.0	0.6455	2.00	692	40
				12.0991	175.0	0.6463	1.84	880	50
04016 + 5044	HD 232871	COU 2458	18794	10.8157	143.4	0.5979	0.37	692	40
				10.8157	143.3	0.5961	0.23	880	50
				11.6921	143.1	0.6054	...	692	40
				11.6921	143.0	0.6031	...	880	50
				12.0936	144.1	0.5972	0.39	692	40
				12.0936	144.1	0.5953	0.31	880	50
04025 + 4601	HD 25237	COU 1697	18845	10.7147	135.5	1.2036	...	692	40
				10.7147	135.4	1.2068	...	562	40
				12.0992	135.9	1.1978	1.84	692	40
				12.0992	135.8	1.1939	1.65	880	50
04025 + 0638	BD+06 620	HD 510	18856	11.6894	151.5	0.0502	0.35	692	40
				11.6894	159.5	0.0540	0.68	880	50
				11.9407	339.3	0.0557	0.69	692	40 [b]
				11.9407	343.8	0.0528	0.05	562	40 [b]
04030 − 0004	HD 25501	YSC 90	18891	10.7120	182.2	0.7607	4.13	692	40
				10.7120	181.8	0.7565	3.96	562	40
04044 − 2931	HD 25815	HDS 515	19015	11.9436	170.5	0.5362	2.77	692	40

Table 2—Continued

WDS (α,δ J2000.0)	HR,ADS HD, or DM	Discoverer Designation	HIP	Date (2000+)	θ (°)	ρ ($''$)	Δm	λ (nm)	$\Delta\lambda$ (nm)
				12.0936	171.9	0.5411	3.13	692	40
				12.0936	172.9	0.5457	2.86	880	50
04047 + 1731	HD 25627	YSC 22	19036	11.9407	95.4	0.3723	2.97	692	40
				11.9407	95.8	0.3716	2.74	562	40
				12.0964	96.7	0.3675	2.99	692	40
				12.0964	96.7	0.3663	3.16	880	50
04057 + 0743	BD+07 595	HDS 518	19104	11.9407	11.3	0.2056	2.36	692	40
				11.9407	13.9	0.2099	2.64	562	40
04065 + 6345	HD 25453	HDS 519	19161	10.7147	185.5	0.4362	3.39	692	40
				10.7147	185.4	0.4365	3.31	562	40
				12.1018	186.1	0.4436	3.45	692	40
				12.1018	186.2	0.4440	3.61	880	50
04070 − 1000	HD 26040	HDS 521Aa,Ab	19206	11.6894	298.1	0.1848	1.32	692	40
				11.6894	297.9	0.1842	1.24	880	50
				12.0964	293.7	0.1811	1.42	692	40
				12.0964	294.7	0.1788	1.22	880	50
04073 + 1332	HD 25977	YSC 23	19229	10.8185	334.9	0.1564	2.45	692	40
				10.8185	335.5	0.1578	2.55	880	50
				12.0964	336.8	0.1574	2.53	692	40
				12.0964	336.7	0.1582	2.34	880	50
04099 + 1552	HD 285499	YSC 24	19451	10.8185	284.8	0.5690	2.18	692	40
				10.8185	284.7	0.5657	2.02	880	50
				11.6921	284.0	0.5758	2.18	692	40
				11.6921	283.7	0.5727	2.23	880	50
				12.0964	284.3	0.5620	2.45	692	40
				12.0964	284.3	0.5613	2.13	880	50
04102 + 1722	HD 285465	HEI 35	19472	11.6921	332.3	0.4636	1.56	692	40
				11.6921	332.1	0.4607	1.18	880	50
				12.0964	332.6	0.4557	1.30	692	40
				12.0964	332.8	0.4565	0.98	880	50
04107 − 0452	ADS 3041	A 2801	19508	10.7120	73.0	0.0760	0.68	692	40
				10.7120	74.3	0.0769	0.70	562	40
04111 + 0832	...	YSC 28	19532	11.9407	221.9	0.8803	2.11	692	40
				11.9407	221.8	0.8806	2.61	562	40
04113 + 0219	BD+01 714	HDS 532	19552	10.7120	277.1	0.9349	2.04	692	40
				10.7120	276.9	0.9354	...	562	40
04114 + 6005	HD 26112	HDS 533	19557	10.7147	115.8	1.4393	...	692	40
				10.7147	115.7	1.4413	...	562	40
04116 + 2950	HD 26397	YR 11	19572	12.1018	88.3	0.4886	3.51	692	40
				12.1018	88.5	0.4843	3.42	880	50
04118 + 4945	BD+49 1121	YSC 29	19581	10.7147	300.5	0.2783	2.22	692	40
				10.7147	300.2	0.2792	2.55	562	40
				12.0992	305.5	0.2784	2.30	692	40
				12.0992	305.4	0.2763	1.89	880	50
04119 + 2338	HD 284163	CHR 14	19591	12.1018	198.4	0.2501	1.46	692	40

Table 2—Continued

WDS (α,δ J2000.0)	HR,ADS HD, or DM	Discoverer Designation	HIP	Date (2000+)	θ (°)	ρ ($''$)	Δm	λ (nm)	$\Delta\lambda$ (nm)
				12.1018	198.8	0.2493	1.11	880	50
04134 + 1335	HD 286578	HEI 216	19709	10.7121	326.5	1.1556	...	692	40
				10.7121	326.7	1.1604	...	562	40
				11.6921	326.4	1.1593	...	692	40
				11.6921	326.1	1.1572	...	880	50
				11.9407	325.9	1.1428	...	692	40
				11.9407	326.1	1.1358	...	562	40
				12.0964	327.1	1.1377	0.77	692	40
				12.0964	327.3	1.1376	0.65	880	50
04134 + 6556	HD 26221	HDS 536	19710	10.7147	214.3	0.1716	4.18	692	40
				10.7147	215.0	0.1702	3.98	562	40
04136 + 0743	ADS 3064	A 1938	19719	11.6895	4.1	0.0552	0.80	692	40
				11.6895	4.0	0.0552	0.68	880	50
04163 + 3644	HD 26872	YSC 128	19915	10.7202	64.2	0.0295	1.67	692	40 [c]
				10.7202	57.8	0.0292	1.70	562	40 [c]
04188 − 1144	HD 27373	HDS 548	20115	12.0937	347.6	0.2242	0.73	692	40
				12.0937	347.7	0.2252	0.69	880	50
04195 + 3800	HD 27214	HDS 552	20176	10.8158	341.8	0.1170	1.01	692	40
				10.8158	341.5	0.1166	0.94	880	50
				12.0992	335.5	0.1271	1.02	692	40
				12.0992	336.2	0.1252	0.94	880	50
04196 + 2104	HD 27310	HDS 553	20181	12.1018	22.6	0.8066	3.13	692	40
				12.1018	23.9	0.8007	4.26	880	50
04201 + 3108	HD 27323	HDS 555	20227	10.7146	123.4	0.1657	3.47	692	40
				10.7146	122.1	0.1594	4.03	562	40
				11.6894	138.9	0.1682	3.24	692	40
				11.6894	137.9	0.1645	2.58	880	50
04202 − 1030	HD 27506	HDS 556	20236	12.0937	155.5	0.3943	3.55	692	40
				12.0937	155.7	0.3919	3.11	880	50
04202 − 0345	HD 27485	YSC 30	20242	12.0964	155.1	0.1949	2.27	692	40
				12.0964	154.8	0.1956	2.18	880	50
04213 + 3815	HD 27427	HDS 559	20326	10.8158	185.9	0.2010	2.95	692	40
				10.8158	186.1	0.1995	2.49	880	50
				12.0992	190.0	0.1988	2.83	692	40
				12.0992	191.1	0.1958	2.69	880	50
04230 + 0924	...	YSC 31	20457	11.9407	102.1	0.4387	3.64	692	40
				11.9407	102.2	0.4397	3.79	562	40
				12.0992	103.5	0.4429	3.57	692	40
				12.0992	103.4	0.4426	3.44	880	50
04237 + 1131	HD 27798	LSC 30	20511	10.7121	349.1	0.0628	0.33	692	40
				10.7121	350.1	0.0637	0.34	562	40
04242 + 1446	HD 27836	HDS 564	20553	12.0992	237.2	0.4278	2.65	692	40
				12.0992	237.1	0.4281	2.20	880	50
04245 + 5051	HD 27673	COU 2459	20586	10.7148	135.0	0.9299	2.78	692	40
				10.7148	134.9	0.9312	3.09	562	40

Table 2—Continued

WDS (α,δ J2000.0)	HR,ADS HD, or DM	Discoverer Designation	HIP	Date (2000+)	θ (°)	ρ ($''$)	Δm	λ (nm)	$\Delta\lambda$ (nm)
				12.1045	134.3	0.9451	...	692	40
				12.1045	134.9	0.9475	...	880	50
04248 + 1552	...	HDS 566	20605	12.0992	344.1	0.3490	0.65	692	40
				12.0992	344.3	0.3490	0.61	880	50
04256 + 1556	HR 1391	FIN 342Aa,Ab	20661	12.0992	86.6	0.0973	0.34	692	40
				12.0992	85.1	0.0985	0.51	880	50
04258 + 1801	HD 27990	COU 2682	20679	12.0993	339.5	0.2633	1.02	692	40
				12.0993	339.6	0.2635	0.86	880	50
04267 + 1241	HD 286798	WOR 15	20745	12.0993	358.8	0.4896	0.37	692	40 [K]
				12.0993	358.9	0.4904	0.31	880	50 [K]
04268 + 5814	HD 27816	HDS 571	20754	10.7148	37.0	0.1715	1.72	692	40
				10.7148	36.9	0.1722	1.73	562	40
				12.1045	38.1	0.1830	1.93	692	40
04282 + 8348	HD 26356	HDS 574	20860	10.8158	66.3	0.3554	3.00	692	40
				10.8158	66.4	0.3527	2.89	880	50
04284 + 4914	HD 28098	HDS 575	20872	10.7148	316.7	0.4784	2.73	692	40
				10.7148	316.5	0.4787	2.46	562	40
				12.0992	317.2	0.4703	2.89	692	40
				12.0992	317.2	0.4694	2.98	880	50
04297 + 1211	HD 28449	HDS 578	20960	12.0937	247.2	0.2457	2.92	692	40
				12.0937	247.3	0.2452	2.78	880	50
04306 − 2301	HD 28708	HDS 580	21032	12.0993	230.3	0.3873	2.42	692	40
				12.0993	230.1	0.3879	2.29	880	50
04312 + 0157	...	HDS 585	21092	11.6894	67.4	0.1521	1.40	692	40
				11.6894	66.7	0.1551	0.91	880	50
				12.0964	69.8	0.1638	1.08	692	40
				12.0964	69.2	0.1641	0.91	880	50
04312 + 1849	...	YSC 179	21089	12.0964	150.1	1.7551	...	692	40
				12.0964	150.2	1.7523	...	880	50
04331 + 6738	HD 28342	HDS 590	21219	10.7148	192.2	0.2142	1.68	692	40
				10.7148	192.3	0.2134	1.87	562	40
				11.6922	190.7	0.2022	1.69	692	40
				11.6922	191.5	0.1990	1.59	880	50
04334 − 2251	CD−23 2011	YSC 180	21244	12.0993	164.9	0.3324	3.57	692	40
				12.0993	163.0	0.3280	3.15	880	50
04341 + 3448	HD 28832	HDS 594	21291	10.7146	286.0	0.2730	2.45	692	40
				10.7146	286.0	0.2732	2.73	562	40
				11.9436	284.6	0.2726	2.49	692	40
				11.9436	284.1	0.2786	2.98	562	40
				12.0992	285.8	0.2717	2.52	692	40
				12.0992	285.7	0.2723	2.22	880	50
04357 + 1010	ADS 3317	CHR 18Aa,Ab	21402	12.0937	8.0	0.1088	1.82	692	40
				12.0937	7.9	0.1086	1.65	880	50
				12.0965	8.1	0.1074	1.91	692	40
				12.0965	9.0	0.1045	1.63	880	50

Table 2—Continued

WDS (α,δ J2000.0)	HR,ADS HD, or DM	Discoverer Designation	HIP	Date (2000+)	θ (°)	ρ ($''$)	Δm	λ (nm)	$\Delta\lambda$ (nm)
04358 + 5037	HD 28908	HDS 596	21417	10.7148	148.1	0.0920	0.79	692	40
				10.7148	148.1	0.0946	0.85	562	40
04375 + 1509	HD 29310	CHR 153	21543	12.0937	127.6	0.5088	2.90	692	40
				12.0937	127.6	0.5081	2.49	880	50
04382 − 1418	HR 1481	KUI 18	21594	12.0993	1.5	1.0825	3.71	692	40
				12.0993	1.5	1.0851	3.95	880	50
04389 − 1207	HD 29573	HDS 599	21644	12.0993	191.5	0.1345	1.87	692	40
				12.0993	191.3	0.1384	1.58	880	50
04400 + 5328	ADS 3358	BU 1295AB	21730	10.7148	133.5	0.1741	1.21	692	40
				10.7148	133.5	0.1752	1.25	562	40
				11.6922	307.2	0.1518	1.38	692	40
				11.6922	307.6	0.1503	1.36	880	50
04400 + 5328	ADS 3358	STF 566AC	21730	10.7148	172.4	0.7485	1.66	692	40
				10.7148	172.3	0.7503	1.72	562	40
				11.6922	170.6	0.7484	...	692	40
				11.6922	350.6	0.7419	...	880	50
04404 + 1631	HD 29608	CHR 154	21762	12.0937	142.2	0.2483	1.53	692	40
				12.0937	141.9	0.2474	1.33	880	50
04424 − 0056	HD 29870	HDS 606	21894	12.0964	236.4	0.4409	2.23	692	40
				12.0964	236.2	0.4411	2.19	880	50
04446 + 3953	HD 29911	COU 1524	22050	10.8158	215.0	0.1512	0.46	692	40
				10.8158	214.9	0.1503	0.40	880	50
				11.9436	215.7	0.1412	0.43	692	40
				11.9436	217.0	0.1463	0.74	562	40
04463 + 4957	HD 29996	HDS 614	22174	10.7202	306.5	0.4901	3.76	692	40
				10.7202	306.5	0.4914	3.33	562	40
				11.6922	306.3	0.4966	3.85	692	40
				11.6922	306.4	0.5007	4.09	880	50
04464 + 4453	...	HDS 615	22182	10.7202	212.2	0.9658	...	692	40
				10.7202	212.1	0.9667	...	562	40
				10.7202	212.4	0.9666	...	692	40
				10.7202	212.1	0.9655	...	562	40
				10.7202	212.2	0.9660	...	692	40
				10.7202	212.1	0.9662	...	562	40
				10.7202	212.0	0.9673	...	692	40
				10.7202	211.7	0.9692	...	562	40
				10.7202	212.2	0.9662	...	692	40
				10.7202	212.1	0.9662	...	562	40
				11.6921	212.1	0.9707	...	692	40
				11.6921	212.4	0.9668	...	880	50
04464 + 4221	HD 30090	COU 2031	22196	10.7148	341.3	0.0583	0.78	692	40
				10.7148	341.2	0.0587	0.55	562	40
				10.7202	340.7	0.0587	0.73	692	40
				10.7202	341.4	0.0576	0.61	562	40
				11.6895	28.3	0.0209	0.96	692	40

Table 2—Continued

WDS (α,δ J2000.0)	HR,ADS HD, or DM	Discoverer Designation	HIP	Date (2000+)	θ (°)	ρ ($''$)	Δm	λ (nm)	$\Delta\lambda$ (nm)
				11.6895	24.4	0.0211	1.20	880	50
04486 + 1256	HD 30469	HDS 618	22327	12.0965	307.6	0.1118	1.91	692	40
				12.0965	307.1	0.1149	2.18	880	50
04501 − 1548	HD 30801	HDS 622	22467	12.0993	168.2	1.1040	...	692	40
				12.0993	168.3	1.1062	...	880	50
04503 + 3949	HD 30531	HDS 624	22487	10.7202	23.1	0.0727	0.44	692	40
				10.7202	23.3	0.0729	0.29	562	40
				11.6921	32.6	0.0662	0.55	692	40
				11.6921	31.5	0.0642	0.51	880	50
				11.9436	34.7	0.0618	0.44	692	40
				11.9436	213.9	0.0624	0.13	562	40 [b]
04529 + 7543	HD 30097	MLR 465	22703	10.8131	219.2	0.9001	2.45	692	40
				10.8131	219.3	0.9005	2.34	880	50
				11.6922	218.2	0.9295	...	692	40
				11.6922	218.2	0.9293	...	692	40
				11.6922	218.5	0.9259	...	880	50
				11.6922	218.5	0.9261	...	880	50
04548 + 1126	HR 1569	MCA 17	22833	12.0965	27.7	0.3331	4.83	692	40
				12.0965	26.9	0.3321	4.24	880	50
04550 + 1436	HD 31282	HDS 634	22853	12.0938	343.9	0.0466	0.61	692	40
				12.0938	345.5	0.0457	0.86	880	50
04553 − 1625	HD 31444	HDS 635	22881	12.0993	284.6	0.3509	3.53	692	40
				12.0993	284.4	0.3510	3.67	880	50
04562 + 1359	HD 31399	YR 12	22942	12.0965	169.1	0.4286	3.65	692	40
				12.0965	168.8	0.4298	3.28	880	50
04570 + 7350	BD+73 257	YSC 145	23016	10.8131	344.2	0.0450	0.76	692	40 [b]
				10.8131	166.4	0.0475	0.87	880	50
				11.6922	139.9	0.0568	1.04	692	40
				11.6922	132.2	0.0552	0.87	880	50
				12.0938	134.9	0.0565	0.74	692	40
				12.0938	134.7	0.0572	0.79	880	50
04572 + 2457	HD 284023	HDS 643	23032	12.0938	331.4	0.3573	1.56	692	40
				12.0938	331.4	0.3557	1.51	880	50
04584 − 0344	HD 31768	HDS 644	23116	12.1019	159.2	0.6052	2.83	692	40
				12.1019	159.2	0.6052	2.36	880	50
04584 + 5150	...	YSC 146	23113	11.6922	7.5	0.5551	...	692	40 [b]
04590 + 1341	HD 287257	HDS 645	23162	11.6895	338.1	0.2352	0.11	692	40
				11.6895	338.1	0.2332	0.20	880	50
				12.0965	338.8	0.2298	0.22	692	40
				12.0965	339.0	0.2296	0.17	880	50
04595 + 7136	HD 31096	YSC 147	23195	11.6922	242.3	0.1202	1.63	692	40
				11.6922	243.0	0.1201	1.54	880	50
				12.0938	241.2	0.1182	1.53	692	40
				12.0938	241.0	0.1187	1.34	880	50
05003 + 5755	HD 31549	HDS 648	23257	10.7202	190.3	0.1320	2.36	692	40

Table 2—Continued

WDS (α,δ J2000.0)	HR,ADS HD, or DM	Discoverer Designation	HIP	Date (2000+)	θ (°)	ρ ($''$)	Δm	λ (nm)	$\Delta\lambda$ (nm)
				10.7202	191.8	0.1302	2.53	562	40
05004 + 4158	HD 31759	COU 1866	23274	10.7202	244.3	0.4160	1.84	692	40
				10.7202	244.0	0.4156	2.01	562	40
05009 + 6108	...	HDS 650	23317	10.7202	333.7	0.1200	1.84	692	40
				10.7202	334.1	0.1181	2.12	562	40
05014 + 1956	HD 285085	HDS 653	23356	12.0938	166.2	0.5788	2.64	692	40
				12.0938	166.2	0.5779	2.51	880	50
05014 + 6209	HD 31614	HDS 652	23357	10.7202	134.2	0.4006	2.83	692	40
				10.7202	133.5	0.4005	3.34	562	40
05017 + 2640	ADS 3608	A 1844AB	23395	12.0965	17.9	0.3364	1.81	692	40
				12.0965	17.8	0.3366	1.59	880	50
05020 + 0959	...	HDS 654	23418	12.0965	150.1	1.3378	1.13	692	40
				12.0965	150.2	1.3379	0.96	880	50
05047 − 2113	HD 32776	HDS 662	23620	10.8131	292.8	0.2226	2.30	692	40
				10.8131	292.4	0.2215	2.63	880	50
				12.0993	291.8	0.2222	2.32	692	40
				12.0993	292.1	0.2211	2.63	880	50
05048 + 1319	HD 32595	HEI 104	23629	11.9407	185.9	0.1256	1.12	692	40
				11.9407	185.9	0.1260	1.19	562	40
05060 + 3556	HD 32608	HDS 664	23724	11.9436	44.2	0.2801	1.62	692	40
				11.9436	44.0	0.2799	1.88	562	40
05072 − 1924	HD 33095	FIN 376	23818	10.8131	237.8	0.0321	0.63	692	40 [c]
				10.8131	237.3	0.0316	0.57	880	50 [c]
05094 − 1540	HD 33406	HDS 678	23988	12.1021	103.0	0.2066	1.54	692	40
				12.1021	102.4	0.2070	1.74	880	50
05097 + 2948	HD 33185	YSC 181	24016	12.0965	19.3	0.0947	0.78	692	40
				12.0965	19.0	0.0947	0.82	880	50
05102 + 2208	HD 33300	HDS 683	24063	12.1019	332.0	0.0822	0.06	692	40
				12.1019	332.8	0.0837	0.01	880	50
05103 − 0736	HD 33507	A 484	24076	10.8159	307.7	0.1994	0.34	692	40
				10.8159	307.5	0.1997	0.18	880	50
05126 + 1025	HD 33720	HDS 689	24273	11.9408	247.0	0.1525	1.83	692	40
				11.9408	248.1	0.1523	1.67	562	40
05135 + 3539	HD 33671	HDS 691	24350	11.9436	9.4	0.6622	3.21	692	40
				11.9436	9.7	0.6639	3.76	562	40
05136 + 0413	HD 33900	HDS 692	24363	12.1019	51.9	0.1219	1.54	692	40
05160 − 1621	HD 34322	LSC 33A,BC	24551	12.1021	357.5	0.2089	1.99	692	40
				12.1021	357.9	0.2087	1.71	880	50
05168 − 0509	HD 34388	HDS 695	24616	10.8159	133.9	0.0861	0.53	692	40
				10.8159	133.5	0.0863	0.38	880	50
05175 + 7432	HD 33355	HDS 696	24664	10.8131	275.4	0.0427	0.57	692	40
				10.8131	276.0	0.0432	0.50	880	50
				12.0938	284.0	0.0366	0.65	692	40
				12.0938	284.8	0.0367	0.50	880	50
05183 + 3056	HD 34383	HDS 698	24743	12.0936	243.5	0.0851	0.63	692	40

Table 2—Continued

WDS (α,δ J2000.0)	HR,ADS HD, or DM	Discoverer Designation	HIP	Date (2000+)	θ (°)	ρ ($''$)	Δm	λ (nm)	$\Delta\lambda$ (nm)
				12.0936	243.0	0.0854	0.57	880	50
05191 + 1430	HD 34593	HEI 41	24812	11.9408	100.6	0.2920	0.63	692	40
				11.9408	100.9	0.2914	0.72	562	40
05195 − 0927	HD 34766	YSC 34	24839	10.8159	229.5	0.2740	2.28	692	40
				10.8159	229.5	0.2756	2.18	880	50
05196 − 0942	HD 34776	HDS 700	24844	12.1021	287.8	0.0280	0.14	692	40
				12.1021	294.7	0.0282	0.49	880	50
05202 + 4105	HD 34557	HDS 701	24902	11.9436	234.8	0.0595	2.61	692	40 [b]
				11.9436	236.6	0.0567	2.70	562	40 [b]
05204 + 1053	HD 34793	LSC 35	24921	11.9408	58.9	0.1567	2.12	692	40
				11.9408	58.1	0.1572	2.58	562	40
05205 − 0549	HD 34890	YSC 182	24930	10.8159	106.6	0.9984	...	692	40
				10.8159	106.4	0.9983	...	880	50
05216 + 3445	HD 280965	LSC 36	25030	11.9437	357.4	0.0676	0.06	692	40
				11.9437	357.4	0.0690	0.08	562	40
05216 + 1020	HD 34957	HDS 704	25033	11.9408	320.8	0.3859	1.43	692	40
				11.9408	320.9	0.3834	1.46	562	40
05219 + 3934	HD 34807	COU 2037	25060	11.9437	142.3	0.3748	0.62	692	40
				11.9437	142.6	0.3752	0.27	562	40
05249 + 5059	HD 35086	HDS 710	25316	11.9437	250.3	0.5975	3.34	692	40
				11.9437	250.4	0.5998	3.32	562	40
05253 + 6511	...	HDS 711AB	25354	12.0938	231.7	1.5970	...	692	40
				12.0938	231.6	1.5931	...	880	50
05278 − 2848	CD−28 2186	LSC 37Aa,Ab	25559	12.0993	54.4	0.3528	3.11	692	40 [K]
				12.0993	55.1	0.3487	2.09	880	50 [K]
05279 + 3447	HD 35652	HDS 721	25565	11.9437	226.4	0.1407	1.90	692	40
				11.9437	226.3	0.1418	1.93	562	40
05279 − 1800	HD 36018	LSC 38	25573	11.9409	152.8	0.2415	3.64	692	40
				11.9409	152.6	0.2348	3.39	562	40
				12.1022	154.0	0.2393	3.59	692	40
				12.1022	153.5	0.2358	3.71	880	50
05285 − 2921	HD 36170	HDS 722	25632	12.0993	148.9	0.3629	1.94	692	40
				12.0993	149.1	0.3640	1.88	880	50
05301 + 2346	HD 36054	YSC 183	25761	12.0938	54.1	1.1396	...	692	40
				12.0938	54.2	1.1382	...	880	50
05305 + 2602	HD 244252	HDS 725	25792	12.0938	317.1	0.1169	3.07	692	40
				12.0938	317.2	0.1173	2.58	880	50
05335 − 0109	HR 1868	YSC 184	26063	10.8158	176.6	0.2303	3.88	692	40
				10.8158	176.9	0.2355	3.43	880	50
05337 − 1841	HD 36845	HDS 733	26078	11.9409	166.4	0.2625	1.94	692	40
				11.9409	166.3	0.2616	2.07	562	40
				12.1022	167.4	0.2640	1.95	692	40
				12.1022	167.4	0.2649	1.79	880	50
05343 + 5616	HD 36332	HDS 736	26124	11.9437	323.9	0.5711	2.13	692	40
				11.9437	324.2	0.5702	2.32	562	40

Table 2—Continued

WDS (α,δ J2000.0)	HR,ADS HD, or DM	Discoverer Designation	HIP	Date (2000+)	θ (°)	ρ ($\prime\prime$)	Δm	λ (nm)	$\Delta\lambda$ (nm)
				12.0965	325.2	0.5681	2.10	692	40
				12.0965	325.3	0.5667	1.98	880	50
$05361-1220$	HD 37161	HDS 750	26301	12.1022	203.8	0.4944	0.63	692	40
				12.1022	203.9	0.4962	0.59	880	50
$05366+2901$	HD 245287	YSC 185	26342	12.0939	356.7	0.3328	3.09	692	40
				12.0939	357.4	0.3281	2.72	880	50
$05396-1552$	HD 37664	HDS 755	26628	11.9409	33.0	0.2106	0.95	692	40
				11.9409	33.3	0.2108	0.84	562	40
				12.1022	34.2	0.2094	0.92	692	40
				12.1022	34.2	0.2119	0.98	880	50
$05397+2554$	HR 1928	OCC 231	26640	12.0939	319.7	0.5337	3.96	692	40
				12.0939	319.7	0.5334	3.66	880	50
				12.1020	319.6	0.5419	4.21	692	40
				12.1020	319.9	0.5386	3.48	880	50
$05401+7646$	HD 36289	HDS 757	26673	12.0938	333.3	0.8010	...	692	40
				12.0938	333.4	0.8015	...	880	50
$05403+1521$	HD 37603	YSC 186Aa,Ab	26692	11.9409	159.5	0.1299	0.09	692	40
				11.9409	159.8	0.1300	0.00	562	40
$05408+2700$	HD 246128	HDS 758	26730	12.0939	241.7	0.3661	0.29	692	40 [b]
				12.0939	241.7	0.3652	0.43	880	50 [b]
$05430-0219$	HD 38087	HDS 762	26939	12.1022	183.3	0.3750	4.01	692	40
				12.1022	183.6	0.3748	2.93	880	50
$05430+7359$	ADS 4246	A 1037A,Ba	26940	12.0938	325.3	0.8938	...	692	40
				12.0938	325.1	0.8909	...	880	50
$05430+7359$	ADS 4246	A 1037A,Bb	26940	12.0938	321.0	0.9307	...	692	40
				12.0938	321.1	0.9268	...	880	50
$05438-0615$	...	HDS 765	27008	12.1022	151.0	0.3271	0.80	692	40
				12.1022	150.9	0.3276	1.12	880	50
$05441-1934$	HD 38314	HDS 766	27043	11.9409	250.0	0.0797	0.92	692	40
				11.9409	254.0	0.0783	0.87	562	40
				12.0966	252.4	0.0789	0.86	692	40
				12.0966	251.3	0.0759	0.82	880	50
$05453-2955$	HD 38552	HDS 773	27148	12.0993	9.4	0.8025	2.23	692	40
				12.0993	9.6	0.8083	1.99	880	50
$05454+1247$	HD 38308	HEI 325	27153	11.9409	310.9	0.4208	1.03	692	40
				11.9409	311.1	0.4190	0.79	562	40
$05462+7156$	HD 37534	HDS 777	27223	12.0965	311.2	0.2942	2.63	692	40
				12.0965	311.0	0.2925	2.46	880	50
$05465+7437$	HD 37393	YSC 148AB	27246	11.9438	327.0	0.2085	3.19	692	40
				12.0965	330.3	0.2076	3.16	692	40
				12.0965	330.5	0.2061	2.66	880	50
$05471+0018$	HD 290861	HDS 779	27309	10.8158	213.6	0.5628	1.21	692	40
				10.8158	213.6	0.5621	0.98	880	50
				12.1048	213.2	0.5593	0.94	692	40
				12.1048	213.1	0.5596	1.50	880	50

Table 2—Continued

WDS (α,δ J2000.0)	HR,ADS HD, or DM	Discoverer Designation	HIP	Date (2000+)	θ (°)	ρ ($''$)	Δm	λ (nm)	$\Delta\lambda$ (nm)
05472 + 1429	HD 38545	CHR 160	27316	11.9409	194.0	0.1376	0.68	692	40
				11.9409	194.1	0.1379	0.66	562	40
05474 − 1032	HR 2001	MCA 22	27341	10.8158	281.3	0.1289	1.59	692	40
				10.8158	280.9	0.1257	1.51	880	50
05487 − 1419	HD 38931	HDS 781	27444	12.1022	58.5	0.1541	2.74	692	40
				12.1022	57.2	0.1550	2.83	880	50
05500 + 0952	HD 39007	HEI 670	27549	11.9409	263.3	1.0916	2.85	692	40
				11.9409	263.5	1.0925	2.64	562	40
05505 − 0310	HD 39160	HDS 785	27589	10.8158	154.1	0.1518	0.20	692	40 [a]
				10.8158	154.0	0.1518	0.00	880	50 [a]
				12.1048	151.2	0.1337	0.00	692	40 [a]
				12.1048	153.7	0.1306	0.60	880	50 [a]
05525 − 0217	HD 39438	HDS 787	27758	10.8159	189.1	0.0791	1.14	692	40
				10.8159	187.4	0.0782	1.11	880	50
05537 − 0542	HD 39647	HDS 793	27861	10.8159	127.0	0.5155	3.60	692	40
				10.8159	125.6	0.5192	3.20	880	50
05556 − 0447	HD 39927	HDS 797	28019	10.8159	274.7	0.3040	3.63	692	40
				10.8159	274.4	0.3004	3.18	880	50
				12.1048	273.5	0.2900	3.56	692	40
				12.1048	273.0	0.2875	3.18	880	50
05560 − 0837	HD 40043	HDS 800	28063	10.8159	232.2	0.2266	2.07	692	40
				10.8159	232.8	0.2254	1.82	880	50
05577 − 1524	HD 40355	HDS 807	28211	12.1022	164.0	0.4433	3.54	692	40
				12.1022	164.1	0.4409	3.30	880	50
05590 − 0740	...	HDS 809	28319	10.8159	123.4	0.2829	0.56	692	40
				10.8159	122.9	0.2826	0.41	880	50
				12.1022	133.1	0.2760	0.39	692	40
				12.1022	132.8	0.2751	0.47	880	50
05594 − 0642	HR 2142	YSC 187	28744	10.8159	272.4	0.5604	4.48	692	40
				10.8159	271.4	0.5665	4.49	880	50
05599 + 3011	HD 249962	HDS 815	28402	12.0939	241.4	0.0675	0.00	692	40
				12.0939	241.5	0.0676	0.27	880	50
05599 − 2957	CD−29 2669	HDS 816	28401	12.0994	169.0	0.4788	1.14	692	40
06011 + 3516	HD 40544	HDS 820	28506	11.9438	173.8	0.4381	2.74	692	40
				11.9438	174.0	0.4392	2.93	562	40
06023 + 0142	HD 40964	CHR 162	28609	10.8159	148.5	0.0779	1.89	692	40
				10.8159	149.0	0.0742	1.68	880	50
06033 − 1603	HD 41255	YSC 188	28678	10.8132	114.7	0.0117	0.06	692	40 [a]
				10.8132	304.8	0.0175	0.05	880	50 [a]
06041 + 2130	HD 41140	HDS 825	28728	12.1020	338.1	0.8001	3.34	692	40
				12.1020	338.1	0.7991	3.10	880	50
06047 − 2804	HD 41571	HDS 828	28793	12.0939	192.2	0.4838	1.85	692	40
				12.0939	192.1	0.4862	1.67	880	50
06074 − 2112	HD 41990	HDS 834	29018	10.8132	178.9	0.2020	1.96	692	40
				10.8132	178.3	0.2059	2.16	880	50

Table 2—Continued

WDS (α,δ J2000.0)	HR,ADS HD, or DM	Discoverer Designation	HIP	Date (2000+)	θ (°)	ρ ($''$)	Δm	λ (nm)	$\Delta\lambda$ (nm)
				11.9409	183.8	0.2146	2.36	692	40
				12.0966	185.0	0.2073	2.29	692	40
				12.0966	183.5	0.2099	2.35	880	50
06098 − 2246	HR 2186	RST 3442	29234	12.0966	87.9	0.2181	0.29	692	40
				12.0966	87.7	0.2171	0.22	880	50
06102 + 8131	HD 39861	HDS 841	29269	11.9438	199.8	0.6654	1.40	692	40
				11.9438	200.1	0.6646	1.83	562	40
06111 − 1348	HD 42606	LSC 40Aa,Ab	29330	10.8132	284.3	0.0553	0.20	692	40
				10.8132	283.6	0.0547	0.17	880	50
06121 + 6505	BD+65 515	HDS 847	29438	12.1047	122.3	0.2932	2.16	692	40
				12.1047	122.2	0.2929	1.95	880	50
06139 + 4128	HD 42652	COU 2185	29577	11.9438	211.6	1.4553	...	692	40
				11.9438	211.8	1.4610	...	562	40
06145 + 6458	BD+64 570	HDS 854	29621	12.1047	191.8	0.2842	0.01	692	40
				12.1047	190.7	0.2927	0.37	880	50
06154 − 0902	ADS 4866	A 668	29705	10.8160	335.0	0.2247	0.80	692	40
				10.8160	335.0	0.2241	0.76	880	50
				12.0966	337.1	0.2293	0.77	692	40
				12.0966	337.3	0.2296	0.72	880	50
06156 + 1409	HD 43209	YR 24	500024	12.0994	75.7	0.4142	2.90	692	40
				12.0994	75.7	0.4153	2.69	880	50
06161 − 2418	...	HDS 857	29773	10.8133	98.8	0.5765	1.49	692	40
				10.8133	98.1	0.5769	0.90	880	50
				11.9410	98.1	0.5659	1.62	692	40
				12.0939	99.0	0.5677	1.54	692	40
				12.0939	98.9	0.5676	0.77	880	50
06171 + 0957	ADS 4890	FIN 331Aa,Ab	29850	12.0994	104.8	0.0606	0.17	692	40
				12.0994	104.7	0.0608	0.14	880	50
06201 − 0752	HD 44178	HDS 866	30105	12.0966	226.6	0.0543	1.20	692	40
				12.0966	229.1	0.0533	1.07	880	50
06212 + 2932	HD 44092	CHR 165	30200	12.0939	170.9	0.1858	1.94	692	40
				12.0939	170.9	0.1854	1.75	880	50
06221 + 5922	ADS 4950	STF 881AB	30272	12.1047	147.7	0.6451	1.31	692	40
				12.1047	147.7	0.6426	1.35	880	50
06239 + 1407	HD 44738	HDS 873	30433	10.8133	334.2	0.2238	1.49	692	40
				10.8133	334.1	0.2228	1.34	880	50
				12.0994	334.5	0.2175	1.49	692	40
				12.0994	334.8	0.2176	1.35	880	50
06245 + 4707	HD 44484	COU 2477	30488	11.9438	125.5	1.3787	...	692	40
				11.9438	125.7	1.3777	...	562	40
06251 − 0551	HD 45068	HDS 877A,Ba	30535	10.8160	121.2	0.3616	3.17	692	40
				10.8160	120.3	0.3638	2.74	880	50
				11.9410	119.9	0.3685	2.98	692	40
				11.9410	121.6	0.3760	3.54	562	40
06251 − 0551	HD 45068	YSC 189A,Bb	30535	10.8160	131.0	0.2992	3.79	692	40

Table 2—Continued

WDS (α,δ J2000.0)	HR,ADS HD, or DM	Discoverer Designation	HIP	Date (2000+)	θ (°)	ρ ($''$)	Δm	λ (nm)	$\Delta\lambda$ (nm)
				10.8160	132.0	0.3037	3.28	880	50
				11.9410	129.8	0.2999	3.42	692	40
				11.9410	129.1	0.3017	4.23	562	40
$06272-2025$	HD 45535	HDS 880	30713	10.8133	251.8	0.3715	2.85	692	40
				10.8133	251.9	0.3713	2.55	880	50
$06288+0612$	HD 258078	YSC 190	30864	12.0939	55.5	0.1023	0.12	692	40
				12.0939	56.6	0.1060	1.09	880	50
$06294+3512$	BD+35 1422	HDS 884	30923	12.0966	164.5	0.4413	3.18	692	40
				12.0966	164.5	0.4426	2.90	880	50
$06297+7201$	HD 44646	HDS 886	30946	12.0966	233.3	0.4531	3.73	692	40
				12.0966	233.0	0.4505	3.60	880	50
$06304-1657$	HD 46066	LSC 42	31004	10.8133	306.3	0.5255	4.69	692	40
				10.8133	305.7	0.5272	4.55	880	50
$06314+0749$	ADS 5159	A 2817	31089	10.8133	111.0	0.1485	0.41	692	40 [b]
				10.8133	110.9	0.1482	0.38	880	50 [b]
				12.0994	134.5	0.1268	0.41	692	40 [b]
				12.0994	134.6	0.1263	0.35	880	50 [b]
$06335-2913$	HD 46680	HDS 895	31271	12.0939	257.7	0.3231	2.61	692	40
				12.0939	256.5	0.3247	2.26	880	50
$06342-1057$	HD 46663	HDS 898	31332	11.9410	24.5	1.0686	...	692	40
				11.9410	24.7	1.0663	...	562	40
				12.0966	25.5	1.0676	2.03	692	40
				12.0966	25.4	1.0705	1.69	880	50
$06350+0816$	...	HDS 899	31408	10.8133	46.7	0.3530	0.79	692	40
				10.8133	46.7	0.3535	0.74	880	50
				12.0994	46.6	0.3510	0.66	692	40
				12.0994	46.6	0.3505	0.64	880	50
$06360-1648$	HD 47039	HDS 903	31518	12.0940	212.0	0.3673	2.34	692	40
				12.0940	212.2	0.3636	2.10	880	50
$06366+7756$	HD 45190	HDS 905	31584	12.0967	314.7	0.3918	2.31	692	40
				12.0967	314.8	0.3912	2.14	880	50
$06375+2435$	HD 47020	HDS 910	31650	10.8133	242.3	0.5344	3.50	692	40
				10.8133	242.4	0.5352	3.32	880	50
$06378+4046$	...	HDS 911	31689	10.8160	291.6	0.3591	2.21	692	40
				10.8160	291.3	0.3578	2.02	880	50
				11.9438	290.0	0.3611	2.21	692	40
				11.9438	290.4	0.3611	2.28	562	40
				12.0966	291.2	0.3586	2.18	692	40
				12.0966	291.2	0.3560	2.11	880	50
$06378+4117$	HD 46880	COU 2373	31687	10.8160	41.5	0.4711	1.98	692	40
				10.8160	41.4	0.4704	1.76	880	50
				11.9438	40.4	0.4700	1.88	692	40
				11.9438	40.4	0.4727	2.03	562	40
				12.0966	41.3	0.4689	1.90	692	40
				12.0966	41.1	0.4683	1.84	880	50

Table 2—Continued

WDS (α,δ J2000.0)	HR,ADS HD, or DM	Discoverer Designation	HIP	Date (2000+)	θ (°)	ρ ($''$)	Δm	λ (nm)	$\Delta\lambda$ (nm)
06379 + 7342	HR 2365	YSC 191	31703	12.0966	350.8	0.2631	3.59	692	40
				12.0966	351.3	0.2624	3.52	880	50
06384 + 2859	HR 2425	MCA 27	31737	10.8134	71.2	0.0693	0.63	692	40
				10.8134	70.9	0.0709	0.61	880	50
06387 + 4321	HD 47030	HDS 917	31782	10.8160	40.6	0.0823	2.02	692	40
				10.8160	42.2	0.0807	1.92	880	50
06403 − 1906	HD 47942	YSC 192	31919	12.0940	211.9	0.0644	0.56	692	40
				12.0940	216.5	0.0679	0.69	880	50
06410 + 0954	ADS 5322	CHR 168Aa,Ab	31978	12.0994	260.9	0.1148	1.50	692	40
				12.0994	261.0	0.1161	1.70	880	50
06416 + 3556	HD 47703	YSC 129	32040	10.8160	271.4	0.0306	0.86	692	40 [c]
				10.8160	267.4	0.0337	1.03	880	50 [c]
				11.9410	284.6	0.0306	0.70	692	40
				11.9410	284.2	0.0300	0.70	562	40
				12.1020	105.2	0.0354	0.64	692	40 [b]
				12.1020	107.5	0.0375	0.72	880	50 [b]
06419 + 4748	HD 47607	HDS 927	32061	11.9438	252.7	0.1479	0.97	692	40
				11.9438	252.6	0.1487	1.14	562	40
06420 − 2015	HD 48315	HDS 928	32065	12.0940	356.9	0.3182	2.56	692	40
				12.0940	356.8	0.3180	2.82	880	50
06426 + 3955	BD+40 1685	HDS 930	32132	11.9438	219.6	0.0521	0.00	692	40
				11.9438	218.8	0.0526	0.00	562	40
06432 − 2821	HD 48628	HDS 933	32185	12.0940	235.4	0.1123	1.34	692	40
				12.0940	234.7	0.1127	1.19	880	50
06441 + 6258	HD 47659	HDS 935	32252	12.1047	13.8	0.1702	2.06	692	40
				12.1047	14.0	0.1712	2.21	880	50
06467 + 0822	HD 49015	HDS 940AB	32475	12.0994	263.8	0.3037	3.79	692	40
				12.0994	263.7	0.3009	3.51	880	50
06479 − 0509	HD 49370	HDS 944	32584	11.9410	139.9	0.6889	3.15	692	40
				11.9410	139.9	0.6837	4.40	562	40
				12.0939	139.5	0.6441	3.04	692	40
				12.0939	139.4	0.6433	2.71	880	50
06487 + 0737	ADS 5469	A 2731AB	32650	12.0994	66.3	1.3177	1.35	692	40
				12.0994	66.1	1.3187	1.24	880	50
06493 − 2858	HD 49872	HDS 946	32697	11.9410	242.6	0.3781	3.18	692	40
				12.0940	246.1	0.3550	2.96	692	40
				12.0940	245.8	0.3567	2.64	880	50
06499 − 2806	HD 49996	HDS 947AB	32767	10.8134	198.9	0.1436	0.34	692	40
				10.8134	198.8	0.1394	0.00	880	50
				12.0940	207.6	0.1406	0.75	692	40
				12.0940	26.4	0.1384	0.35	880	50 [b]
06499 − 2806	HD 49996	HDS 947AC	32767	10.8134	222.8	0.4940	3.63	692	40
				10.8134	223.8	0.4965	2.75	880	50
06502 + 3624	HD 49472	COU 1738	32798	11.9438	179.5	0.1685	0.68	692	40
				11.9438	179.8	0.1693	0.67	562	40

Table 2—Continued

WDS (α,δ J2000.0)	HR,ADS HD, or DM	Discoverer Designation	HIP	Date (2000+)	θ (°)	ρ ($''$)	Δm	λ (nm)	$\Delta\lambda$ (nm)
06503 + 5308	BD+53 1071	YSC 193	32805	11.9438	223.8	0.5856	4.32	692	40
				11.9438	224.0	0.5874	4.67	562	40
06510 + 0551	HD 49932	HDS 950	32872	12.0967	338.4	0.1056	0.18	692	40
				12.0967	338.6	0.1050	0.18	880	50
06511 + 5425	...	MLR 688	32887	12.1020	93.3	1.0858	1.72	692	40
				12.1020	93.4	1.0938	1.51	880	50
06525 + 3248	HD 265119	COU 1552	32999	12.1020	292.0	0.2262	0.62	692	40
				12.1020	292.0	0.2220	0.80	880	50
06532 + 3826	HR 2541	COU 1877	33064	10.8161	253.6	0.2275	1.88	692	40
				10.8161	253.8	0.2275	1.83	880	50
				12.1050	262.7	0.2343	1.88	692	40
				12.1050	262.6	0.2336	1.86	880	50
06552 + 0939	HD 50817	YSC 194	33259	12.0967	138.2	0.5256	2.58	692	40
				12.0967	138.3	0.5255	2.36	880	50
06564 + 0957	HD 51104	HDS 960	33372	12.0967	209.0	0.7640	3.08	692	40
				12.0967	208.9	0.7657	2.93	880	50
06571 + 3217	HD 51023	COU 1412	33430	12.1020	72.2	0.2020	1.70	692	40
				12.1020	72.8	0.2053	1.66	880	50
06580 + 0218	HD 51566	CHR 25	33513	12.0967	32.1	0.8583	1.53	692	40
				12.0967	32.0	0.8590	1.43	880	50
07034 + 0021	HD 53004	HDS 983	34005	12.0967	187.1	0.1238	0.43	692	40
				12.0967	186.9	0.1243	0.46	880	50
07052 + 7039	HD 51885	HDS 987	34169	12.1047	195.0	0.7345	...	692	40
				12.1047	194.3	0.7358	...	880	50
07074 − 2127	...	YSC 195	34361	10.8134	283.5	0.0449	1.87	692	40
				10.8134	277.6	0.0496	1.92	880	50
07080 + 3552	HD 53816	COU 2063	34411	10.8161	169.0	0.1821	0.85	692	40
				10.8161	169.0	0.1824	0.84	880	50
				11.9411	169.6	0.1870	0.85	692	40
				11.9411	169.7	0.1867	0.89	562	40
				12.1050	170.8	0.1871	0.85	692	40
				12.1050	170.9	0.1868	0.75	880	50
07121 + 0528	HD 55184	HDS 999	34789	12.0967	6.7	0.3440	3.38	692	40
				12.0967	6.8	0.3452	3.73	880	50
07155 + 4428	BD+44 1604	HDS 1006	35100	11.9411	78.6	0.4689	2.53	692	40
				11.9411	78.7	0.4698	2.92	562	40
07167 + 1609	HD 56200	HDS 1007	35219	10.8134	353.7	0.1412	1.63	692	40
				10.8134	353.3	0.1396	1.52	880	50
				12.0967	186.4	0.0681	1.57	692	40
				12.0967	6.5	0.0675	1.44	880	50
07171 + 2641	HD 56176	CHR 218	35253	12.0967	227.3	0.1571	1.01	692	40
				12.0967	227.0	0.1575	1.11	880	50
07180 + 6845	HD 55330	HDS 1010	35335	12.1021	253.2	0.2299	2.62	692	40
07189 + 2556	HD 56649	HDS 1017	35435	12.0967	248.2	0.5457	2.80	692	40
				12.0967	248.1	0.5451	2.68	880	50

Table 2—Continued

WDS (α,δ J2000.0)	HR,ADS HD, or DM	Discoverer Designation	HIP	Date (2000+)	θ (°)	ρ ($\prime\prime$)	Δm	λ (nm)	$\Delta\lambda$ (nm)
07191 + 1019	HD 56844	LSC 44	35446	10.8134	346.3	0.1043	1.40	692	40
				10.8134	346.4	0.1048	1.37	880	50
07192 + 2058	HD 56762	HDS 1019	35459	12.0967	167.0	0.3099	3.23	692	40
				12.0967	166.9	0.3094	2.79	880	50
07192 + 5908	HD 56099	HDS 1018	35457	10.8161	247.1	0.1220	0.11	692	40 [b]
				10.8161	64.4	0.1198	0.44	880	50
				12.1048	80.1	0.1185	0.28	692	40
				12.1048	80.2	0.1200	0.28	880	50
07210 + 1305	HD 57269	HDS 1032	35620	10.8134	253.6	0.1748	1.26	692	40
				10.8134	253.5	0.1744	1.12	880	50
07215 + 3740	HD 57104	YSC 35	35662	10.8161	331.1	0.1514	2.45	692	40
				10.8161	330.8	0.1508	2.63	880	50
				11.9411	335.4	0.1380	2.43	692	40
				11.9411	335.6	0.1380	2.17	562	40
				12.1049	337.1	0.1386	2.48	692	40
				12.1049	335.0	0.1393	2.91	880	50
07231 + 4042	HD 57448	HDS 1036	35811	12.1049	336.6	0.4319	2.92	692	40
				12.1049	337.4	0.4347	3.29	880	50
07243 + 3619	HD 57769	HDS 1039	35919	10.8161	352.2	0.4789	2.40	692	40
				10.8161	352.2	0.4775	2.42	880	50
				11.9411	352.1	0.4729	2.39	692	40
				11.9411	352.3	0.4726	2.53	562	40
				12.1049	353.2	0.4732	2.57	692	40
				12.1049	354.7	0.4695	2.68	880	50
07293 + 1227	HD 59179	LSC 45	36387	10.8134	206.9	0.0870	1.38	692	40
				10.8134	207.2	0.0870	1.40	880	50
				12.0940	215.5	0.0814	1.32	692	40
				12.0940	215.0	0.0833	1.30	880	50
07298 + 3710	HD 59036	HDS 1057	36424	11.9411	5.6	0.1186	0.28	692	40
				11.9411	5.9	0.1194	0.28	562	40
				12.1021	7.4	0.1192	0.18	692	40
				12.1021	7.3	0.1190	0.21	880	50
07307 + 4115	HD 59174	YSC 196	36511	10.8161	302.1	1.0593	...	692	40
				10.8161	302.2	1.0523	...	880	50
				11.9411	301.3	1.0493	...	692	40
				11.9411	301.7	1.0425	...	562	40
07312 + 0210	HD 59688	TOK 393	36557	12.0967	283.0	0.0608	2.12	692	40
				12.0967	283.4	0.0644	2.08	880	50
07338 + 1324	HD 60183	YSC 130	36771	10.8134	298.8	0.0161	0.99	692	40 [c]
				10.8134	302.8	0.0207	1.95	880	50 [c]
				11.9411	116.3	0.0232	1.84	692	40
				11.9411	111.9	0.0164	1.15	562	40
07356 + 5212	HD 60077	MLR 670	36935	12.1021	142.4	0.8250	2.71	692	40
				12.1021	142.3	0.8208	2.59	880	50
07417 + 0942	ADS 6291	STF 1130	37484	11.9411	50.8	0.4694	0.45	692	40

Table 2—Continued

WDS (α,δ J2000.0)	HR,ADS HD, or DM	Discoverer Designation	HIP	Date (2000+)	θ (°)	ρ ($''$)	Δm	λ (nm)	$\Delta\lambda$ (nm)	
				11.9411	50.9	0.4705	0.53	562	40	
07429 + 6517	HD 61250	HU 843	37604	12.0967	71.3	0.3411	1.56	692	40	
				12.0967	71.2	0.3400	1.49	880	50	
07436 + 0816	HD 62303	HDS 1092	37657	11.9411	205.5	0.6319	2.58	692	40	
				11.9411	205.6	0.6317	2.93	562	40	
07441 + 5026	HD 61931	COU 2607	37701	12.1049	164.3	0.9743	...	692	40	
				12.1049	164.4	0.9728	...	880	50	
07472 + 0055	HD 62093	YSC 197	37990	10.8160	265.6	0.0378	2.51	692	40	
				10.8160	264.7	0.0429	2.20	880	50	
07476 + 0455	HD 63140	HDS 1102	38024	10.8160	302.1	0.3826	1.90	692	40	
				10.8160	302.1	0.3852	1.76	880	50	
07480 + 6018	ADS 6354	HU 1247	38052	10.8161	251.2	0.1501	0.45	692	40	[b]
				10.8161	251.3	0.1503	0.44	880	50	[b]
				12.0968	230.0	0.1730	0.37	692	40	[b]
				12.0968	229.9	0.1723	0.28	880	50	[b]
07495 + 3924	BD+39 2011	HDS 1108	38191	10.8161	68.7	0.1765	0.59	692	40	
				10.8161	68.2	0.1753	0.57	880	50	
				12.1021	70.0	0.1693	0.49	692	40	
				12.1021	69.8	0.1689	0.45	880	50	
07508 + 0317	HD 63799	A 2880	38300	10.8160	147.2	0.1437	0.41	692	40	
				10.8160	147.2	0.1434	0.43	880	50	
07510 − 0150	BD−01 1858	HDS 1117	38315	10.8160	229.0	0.5283	3.17	692	40	
				10.8160	229.0	0.5342	2.93	880	50	
07522 + 4109	HD 63749	YR 25	38415	12.1050	7.0	0.1903	1.55	692	40	
				12.1050	6.4	0.1847	1.20	880	50	
07534 + 4544	HD 63903	COU 2492	38527	12.1049	8.1	0.6462	2.74	692	40	
				12.1049	7.6	0.6434	2.86	880	50	
07545 + 6008	...	HDS 1123	38619	12.0968	174.6	0.7649	2.23	692	40	
				12.0968	174.6	0.7656	1.69	880	50	
07546 − 0125	HD 64606	YSC 198Aa,Ab	38625	10.8160	324.2	0.5251	3.83	692	40	[K]
				10.8160	324.2	0.5244	3.17	880	50	[K]
				11.9438	325.0	0.5851	3.96	692	40	[K]
				11.9438	325.2	0.5839	4.29	562	40	[K]
07558 + 1320	HD 64730	YSC 199	38730	11.9411	107.9	0.1399	1.75	692	40	
				11.9411	108.0	0.1396	1.59	562	40	
08017 + 6019	HR 3109	MCA 33	39261	10.8162	302.3	0.0941	1.35	692	40	
				10.8162	302.1	0.0920	1.27	880	50	
				12.0968	312.3	0.0814	1.27	692	40	
				12.0968	312.3	0.0829	1.22	880	50	
08021 − 1710	...	HDS 1140AB	39293	11.9439	139.7	0.2672	1.81	692	40	
				11.9439	139.1	0.2625	1.99	562	40	
08103 + 6943	HD 66751	YSC 200	40015	12.0968	277.8	0.0358	0.69	692	40	
				12.0968	279.4	0.0372	0.64	880	50	
08108 + 3443	HD 67766	HDS 1164	40048	12.1021	197.4	0.3608	1.73	692	40	
				12.1021	197.5	0.3604	1.65	880	50	

Table 2—Continued

WDS (α,δ J2000.0)	HR,ADS HD, or DM	Discoverer Designation	HIP	Date (2000+)	θ (°)	ρ ($''$)	Δm	λ (nm)	$\Delta\lambda$ (nm)
08113 + 4735	...	HDS 1169AB	40089	12.0968	17.1	1.3038	2.31	692	40
				12.0968	17.1	1.3036	1.65	880	50
08208 + 5657	HD 69660	HDS 1186	40905	10.8162	166.6	0.0679	1.92	692	40
				10.8162	161.2	0.0729	1.79	880	50
08240 − 1548	HD 70904	RST 4396	41171	11.9439	147.8	0.9295	...	692	40
				11.9439	148.1	0.9260	...	562	40
08259 − 1623	BD-15 2429	HDS 1199	41322	11.9439	183.5	0.5863	2.43	692	40
				11.9439	184.1	0.5881	2.55	562	40
08263 + 3310	BD+33 1696	HDS 1200	41362	12.0995	323.1	0.3573	0.00	692	40
				12.0995	323.3	0.3561	0.04	880	50
08281 + 3554	HD 71323	HDS 1208	41519	12.1021	204.6	0.1535	1.91	692	40
				12.1021	204.0	0.1514	2.02	880	50
08307 + 4645	HD 71705	YSC 3Aa,Ab	41739	12.0968	112.8	0.0900	0.24	692	40
				12.0968	112.9	0.0899	0.22	880	50
08307 + 4645	HD 71705	COU 2684AB	41739	12.0968	340.2	1.1816	2.61	692	40
				12.0968	340.3	1.1803	2.42	880	50
08317 + 3922	BD+39 2115	HDS 1219	41830	12.0968	117.8	0.2578	0.26	692	40
				12.0968	117.8	0.2573	0.20	880	50
08342 − 0957	HD 72746	HDS 1226	42037	11.9439	5.5	0.1612	1.23	692	40
				11.9439	6.9	0.1568	1.77	562	40
08446 − 0927	HD 74608	HDS 1259	42903	11.9439	208.1	0.2100	1.96	692	40
				11.9439	207.7	0.2121	2.17	562	40
08447 − 2126	BD−20 2665	HDS 1260AB	42910	12.0995	194.8	0.5081	3.95	692	40 [K]
				12.0995	194.7	0.5053	2.77	880	50 [K]
08447 − 2126	BD−20 2665	TOK 395BAC	42910	12.0995	194.2	0.6789	3.96	692	40 [K]
				12.0995	194.4	0.6719	2.77	880	50 [K]
08449 − 0815	HD 74643	HDS 1261	42924	11.9439	209.9	0.7384	3.26	692	40
				11.9439	210.0	0.7425	3.50	562	40
08462 + 1811	HD 74720	HDS 1268	43044	12.0996	185.3	0.3487	1.77	692	40
				12.0996	185.2	0.3508	1.65	880	50
09106 + 3437	BD+35 1952	YSC 36	45053	12.0998	238.6	0.0845	0.00	692	40
				12.0998	238.8	0.0845	0.07	880	50
09187 + 3935	BD+40 2185	COU 2383	45674	12.0998	161.2	1.3219	1.50	692	40
				12.0998	161.2	1.3185	1.35	880	50
09256 + 3941	HD 81225	YSC 4	46237	12.0998	288.2	0.3092	2.32	692	40
				12.0998	288.1	0.3072	2.09	880	50
09276 + 3453	BD+35 2004	HDS 1355	46391	12.0998	293.3	0.5424	2.47	692	40
				12.0998	293.2	0.5405	2.35	880	50
09301 + 3202	HD 81996	YSC 201	46590	12.0999	356.7	0.0344	0.02	692	40
				12.0999	174.5	0.0339	0.23	880	50
09302 − 0600	HD 82142	HDS 1365	46602	12.1024	349.0	0.5298	2.72	692	40
				12.1024	349.1	0.5288	2.49	880	50
09322 − 0845	...	YSC 202	46801	12.1024	39.9	0.4375	2.99	692	40
				12.1024	39.9	0.4379	2.87	880	50
09338 + 3232	BD+33 1878	COU 1415	46915	12.0995	300.6	0.1291	0.54	692	40

Table 2—Continued

WDS (α,δ J2000.0)	HR,ADS HD, or DM	Discoverer Designation	HIP	Date (2000+)	θ (°)	ρ ($''$)	Δm	λ (nm)	$\Delta\lambda$ (nm)
				12.0995	300.7	0.1288	0.49	880	50
				12.0999	300.4	0.1301	0.52	692	40
				12.0999	300.3	0.1316	0.52	880	50
09346 + 4123	BD+42 2022	HDS 1381	46989	12.0999	147.4	1.0200	3.01	692	40
				12.0999	147.4	1.0170	2.88	880	50
09437 + 3229	BD+33 1899	COU 1567	47714	12.0995	260.9	0.9614	1.08	692	40
				12.0995	260.9	0.9590	1.03	880	50
09454 − 0829	HD 84487	HDS 1408	47874	12.1024	265.4	0.3486	3.60	692	40
				12.1024	265.4	0.3498	3.96	880	50
09548 + 6515	HD 85515	HDS 1430	48612	12.1024	189.6	0.3682	2.19	692	40
				12.1024	189.7	0.3677	1.87	880	50
09581 + 3856	HD 86237	COU 2086	48878	12.0999	5.5	0.0291	0.49	692	40
				12.0999	5.8	0.0286	0.00	880	50
09598 + 3306	BD+33 1931	HDS 1441	49000	12.0995	279.3	0.5112	2.55	692	40
				12.0995	279.1	0.5116	1.79	880	50
10067 + 1754	HD 87646	BAG 23Aa,Ab	49522	12.1024	105.6	0.0286	0.73	692	40
				12.1024	113.1	0.0252	0.53	880	50
10067 + 1754	HD 87646	HDS 1457AB	49522	12.1024	67.3	0.4358	2.09	692	40
				12.1024	67.4	0.4357	1.79	880	50
10109 + 3628	HD 88191	HDS 1466	49864	12.0999	177.8	0.5627	4.57	692	40
				12.0999	177.8	0.5616	4.72	880	50
10110 + 4040	HD 88161	HDS 1467	49870	12.0999	344.0	0.2962	4.16	692	40
				12.0999	343.1	0.2969	4.20	880	50
10116 + 1321	ADS 7674	HU 874	49929	12.1024	284.7	0.2129	1.19	692	40
				12.1024	284.6	0.2129	1.13	880	50
10125 + 1552	BD+16 2093	HDS 1470	50000	12.1024	60.9	0.3231	1.61	692	40
				12.1024	60.8	0.3237	1.52	880	50
10140 + 4313	BD+43 2000	HDS 1473	50131	12.0999	260.3	0.3051	2.43	692	40
				12.0999	259.7	0.3045	2.34	880	50
10143 + 1207	BD+12 2173	HDS 1474	50159	12.1024	296.1	0.8957	2.80	692	40
				12.1024	296.1	0.8923	2.66	880	50
10151 + 6443	HD 88575	HDS 1478	50214	12.0999	65.8	0.8053	3.39	692	40
				12.0999	65.7	0.8059	3.27	880	50
10161 − 2837	HD 89090	TOK 199	50288	11.9442	291.3	0.0313	0.74	692	40
				11.9442	292.1	0.0314	0.61	562	40
				12.0971	276.0	0.0292	0.66	692	40
				12.0971	273.1	0.0287	0.55	880	50
10182 + 0731	HD 89291	YSC 92	50462	12.1024	13.0	0.1621	3.00	692	40
				12.1024	15.1	0.1698	2.73	880	50
10183 + 0841	HD 89309	YSC 93	50470	12.1024	91.0	0.2884	2.23	692	40
				12.1024	90.9	0.2894	1.96	880	50
10209 + 6015	BD+60 1253	YSC 203	50674	12.0999	334.9	0.8608	4.24	692	40
				12.0999	335.0	0.8637	3.88	880	50
10212 + 2642	HD 89631	HDS 1488	50699	11.9442	268.7	0.1139	2.37	692	40
				11.9442	267.7	0.1178	2.35	562	40

Table 2—Continued

WDS (α,δ J2000.0)	HR,ADS HD, or DM	Discoverer Designation	HIP	Date (2000+)	θ (°)	ρ ($''$)	Δm	λ (nm)	$\Delta\lambda$ (nm)
$10214-2616$	HD 89817	HDS 1491	50724	11.9442	79.6	0.1425	1.05	692	40
				11.9442	80.6	0.1403	1.23	562	40
				12.0971	79.2	0.1414	1.09	692	40
				12.0971	79.3	0.1414	0.96	880	50
$10254-2912$	HD 90366	YSC 204	51021	11.9442	266.6	0.2483	3.94	692	40
				11.9442	265.4	0.2503	3.67	562	40
$10264+2545$	BD+26 2085	HDS 1500	51094	12.1025	278.0	0.1191	1.17	692	40
				12.1025	277.6	0.1169	1.17	880	50
$10323+2427$	HD 91220	HDS 1511	51591	12.1025	37.7	0.1212	1.39	692	40
				12.1025	37.9	0.1199	1.28	880	50
$10391+4529$	BD+46 1648	COU 2094	52142	11.9415	213.6	0.5943	0.30	692	40 [b]
				11.9415	213.7	0.5972	0.40	562	40 [b]
				12.0999	34.7	0.5932	0.29	692	40
				12.0999	34.6	0.5927	0.04	880	50
$10442+3955$	HD 92903	YR 26	52510	12.0996	195.5	0.5322	3.46	692	40
				12.0996	195.5	0.5341	2.89	880	50
				12.0999	195.9	0.5311	3.52	692	40
				12.0999	195.8	0.5309	2.85	880	50
$10463+2537$	HD 93242	HDS 1539	52681	12.1025	61.5	0.4126	1.76	692	40
				12.1025	61.3	0.4119	1.84	880	50
$10474+0236$	...	HDS 1542	52774	12.0971	70.4	0.5655	0.28	692	40
				12.0971	70.2	0.5654	0.34	880	50
$10498+2310$	...	YSC 205	52956	12.1025	119.6	0.1477	1.67	692	40
				12.1025	120.1	0.1450	1.73	880	50
$10526-0207$	BD−01 2457	YSC 206	53169	12.0971	249.5	0.0266	0.00	692	40 [K]
				12.0971	250.1	0.0288	0.37	880	50 [K]
$10529-1717$	HD 94310	HDS 1556	53206	12.1025	270.8	0.0988	0.20	692	40
				12.1025	270.8	0.1009	0.25	880	50
$10543+0737$	HD 94470	HDS 1560A,Ba	53318	12.1025	239.7	0.5732	2.32	692	40
				12.1025	239.7	0.5751	2.08	880	50
$10543+0737$	HD 94470	HDS 1560A,Bb	53318	12.1025	225.1	0.5570	3.50	692	40
				12.1025	225.3	0.5526	2.84	880	50
$10544+3840$	BD+39 2389	COU 1746	53326	12.0999	324.4	0.3739	0.19	692	40
				12.0999	324.4	0.3732	0.08	880	50
$10566-1840$	HD 94821	HDS 1563	53497	12.1025	215.2	1.1324	...	692	40
				12.1025	215.2	1.1338	...	880	50
$10592+6340$	BD+64 823	HDS 1565	53698	12.0999	96.5	0.1607	0.83	692	40
				12.0999	96.3	0.1603	0.78	880	50
$11000-0328$	ADS 8007	STF 1500	53765	12.0971	300.3	1.3454	...	692	40
				12.0971	300.3	1.3424	...	880	50
$11008+3913$	HR 4288	YSC 5	53838	12.0996	94.4	0.4080	3.66	692	40
				12.0996	93.3	0.4039	3.65	880	50
				12.0999	93.9	0.4088	3.70	692	40
				12.0999	93.9	0.4088	3.59	880	50
				12.0999	93.9	0.4102	3.74	692	40

Table 2—Continued

WDS (α,δ J2000.0)	HR,ADS HD, or DM	Discoverer Designation	HIP	Date (2000+)	θ (°)	ρ ($\prime\prime$)	Δm	λ (nm)	$\Delta\lambda$ (nm)
				12.0999	93.7	0.4106	3.84	880	50
$11014-1204$	HD 95502	HDS 1572	53879	12.1025	140.5	0.1144	1.23	692	40
				12.1025	140.2	0.1137	1.12	880	50
$11052+4835$	BD+49 2015	YSC 207	54190	12.0944	248.7	0.3799	2.63	692	40
				12.0944	248.4	0.3772	2.33	880	50
$11075+3857$	HD 96456	HDS 1585	54376	12.1000	188.5	0.3951	2.25	692	40
				12.1000	188.2	0.3889	2.22	880	50
$11077+5303$	HD 96452	HDS 1587	54389	12.0944	215.0	0.7579	2.88	692	40
				12.0944	214.7	0.7557	2.57	880	50
$11102-1122$	HD 97038	HDS 1590	54580	12.0971	325.1	0.1107	0.14	692	40
				12.0971	325.3	0.1107	0.00	880	50
$11114+4150$	BD+42 2189	HDS 1593	54663	12.1000	161.3	0.2628	1.81	692	40
				12.1000	161.4	0.2620	1.36	880	50
$11132+0014$	...	YSC 208	54803	12.0944	294.1	0.2405	0.26	692	40 [K]
				12.0944	294.1	0.2395	0.22	880	50 [K]
$11133+7738$	HD 97177	MLR 526	54821	11.9442	309.4	0.7168	1.62	692	40
				11.9442	309.5	0.7134	1.97	562	40
$11214-2936$	HD 98730	HDS 1616	55450	12.0972	173.4	0.3477	0.87	692	40
				12.0972	173.6	0.3486	0.86	880	50
$11243+1354$	HD 99088	HDS 1622	55661	12.0972	37.5	0.8211	2.62	692	40
				12.0972	37.4	0.8224	2.40	880	50
$11260+1213$	HD 99328	YSC 41	55799	12.0972	278.5	1.1904	4.32	692	40
				12.0972	278.5	1.1870	4.38	880	50
$11272-1604$	BD−15 3267	HDS 1627Aa,Ab	55884	12.0944	172.6	0.1083	0.36	692	40
				12.0944	173.2	0.1101	0.47	880	50
$11290+1555$	HD 99811	HDS 1629	56030	12.0972	323.4	0.4703	2.55	692	40
				12.0972	323.4	0.4680	2.08	880	50
$11309+4345$	...	YSC 42	56177	12.1000	136.3	0.1928	2.46	692	40
				12.1000	135.8	0.1966	1.66	880	50
$11341+1454$	HD 100509	HDS 1641	56427	12.0972	260.6	0.4866	2.34	692	40
				12.0972	260.4	0.4862	2.14	880	50
$11342+1101$	HD 100518	YSC 43Aa,Ab	56429	12.0972	337.8	0.0108	0.54	692	40
				12.0972	356.8	0.0101	0.76	880	50
$11342+1101$	HD 100518	HDS 1642AB	56429	12.0972	246.5	1.1109	1.43	692	40
				12.0972	246.1	1.1082	1.79	880	50
$11365+2502$	HD 100843	HDS 1645	56613	12.0972	338.4	0.2229	1.72	692	40
				12.0972	338.9	0.2231	1.66	880	50
$11392+1750$	HD 101241	YSC 209	56840	12.0973	346.9	1.2160	4.22	692	40
				12.0973	347.0	1.2119	4.42	880	50
$11436-1401$	...	YSC 210	57181	12.0945	6.5	0.1299	0.00	692	40
				12.0945	6.6	0.1274	0.31	880	50
$11464-2758$	HD 102301	LSC 49	57421	12.0945	98.4	0.2026	2.68	692	40
				12.0945	98.5	0.2048	2.68	880	50
$11499+3645$	HD 102760	HDS 1669	57695	12.1026	89.1	0.1180	0.26	692	40
				12.1026	89.1	0.1176	0.02	880	50

Table 2—Continued

WDS (α,δ J2000.0)	HR,ADS HD, or DM	Discoverer Designation	HIP	Date (2000+)	θ (°)	ρ ($\prime\prime$)	Δm	λ (nm)	$\Delta\lambda$ (nm)
11502 + 1301	HD 102809	YSC 95	57721	12.0972	41.6	0.4295	3.88	692	40
				12.0972	41.3	0.4281	3.38	880	50
11503 + 3741	...	HDS 1670AB	57731	12.1026	21.7	1.2392	0.74	692	40
				12.1026	21.7	1.2373	0.51	880	50
11511 + 2245	HD 102926	HDS 1671	57795	12.0973	68.9	0.6380	2.89	692	40
				12.0973	68.7	0.6379	3.16	880	50
11539 + 1402	HD 58006	YSC 96	58006	12.0972	252.5	0.1153	1.94	692	40
				12.0972	251.7	0.1124	1.72	880	50
12006 + 1820	HD 104290	HDS 1688	58568	12.0973	7.6	0.4667	4.49	692	40
				12.0973	7.6	0.4665	4.64	880	50
12015 + 3444	BD+35 2302	HDS 1689	58640	12.1000	76.9	0.0785	0.26	692	40
				12.1000	77.4	0.0802	0.00	880	50
12017 + 4728	BD+48 1992	COU 1752	58659	12.1000	111.2	0.1226	1.31	692	40
				12.1000	112.4	0.1199	1.26	880	50
12026 + 4117	HD 104557	HDS 1692	58716	12.1000	221.3	0.0639	0.86	692	40
				12.1000	220.0	0.0618	0.83	880	50
12028 + 2450	HD 104603	HDS 1693	58731	12.0973	165.0	0.2064	2.37	692	40
				12.0973	164.7	0.2045	2.14	880	50
12040 − 1018	HD 104788	HDS 1696	58830	12.1026	33.9	0.1455	1.01	692	40 [b]
				12.1026	33.4	0.1478	0.96	880	50 [b]
12048 + 5648	HD 238066	HDS 1700A,Ba	58902	12.0945	48.0	0.5648	0.14	692	40
				12.0945	47.8	0.5632	0.35	880	50
12048 + 5648	HD 238066	YSC 211A,Bb	58902	12.0945	49.9	0.5399	0.76	692	40
				12.0945	50.3	0.5357	1.07	880	50
12051 + 4134	BD+42 2271	HDS 1703	58941	12.0973	324.9	0.4045	2.43	692	40
				12.0973	325.1	0.4044	2.25	880	50
12059 + 5018	HD 105072	HDS 1706	59007	12.0945	129.6	0.6328	4.63	692	40
				12.0945	129.5	0.6298	4.64	880	50
12108 + 3954	ADS 8446	STF 1606	59366	12.0973	151.3	0.4932	0.44	692	40
				12.0973	151.4	0.4923	0.36	880	50
12117 − 1034	HD 105968	HDS 1720	59452	12.1026	227.2	0.3548	2.02	692	40
				12.1026	227.0	0.3554	2.35	880	50
12119 + 5942	HD 106055	HDS 1723	59474	12.0945	112.4	0.5760	2.46	692	40
				12.0945	112.3	0.5745	2.04	880	50
12125 + 3940	...	HDS 1727	59534	12.0973	341.2	0.4594	1.33	692	40
				12.0973	341.3	0.4593	1.02	880	50
12186 − 1424	HD 107040	YSC 44	60022	12.1026	235.1	0.0298	0.00	692	40 [b]
				12.1026	237.7	0.0318	0.44	880	50 [b]
12210 + 4531	HD 107467	HDS 1740Aa,Ab	60229	12.0973	108.7	0.4488	4.60	692	40
				12.0973	108.7	0.4505	4.66	880	50
12215 + 5014	HD 233925	HDS 1741	60270	12.0945	22.3	0.2469	0.19	692	40 [b]
				12.0945	22.3	0.2466	0.26	880	50 [b]
12243 + 2606	HD 107966	YSC 97	60514	12.1027	280.7	0.2088	3.91	692	40
				12.1027	281.4	0.2089	3.60	880	50
12265 + 5229	BD+53 1549	HDS 1751	60707	12.0945	317.0	0.3846	1.72	692	40

Table 2—Continued

WDS (α,δ J2000.0)	HR,ADS HD, or DM	Discoverer Designation	HIP	Date (2000+)	θ (°)	ρ ($''$)	Δm	λ (nm)	$\Delta\lambda$ (nm)	
				12.0945	317.0	0.3829	1.63	880	50	
$12284+6528$	HD 108649	HDS 1756	60858	12.0973	154.9	0.1564	0.66	692	40	
				12.0973	155.3	0.1554	0.64	880	50	
$12333-2516$	HD 109223	YSC 212	61263	11.4503	76.6	0.1395	3.25	692	40	
				11.4503	73.5	0.1416	3.36	880	50	
$12349+2727$	HD 109483	YSC 99	61402	11.4503	273.9	0.3818	2.62	692	40	
				11.4503	273.7	0.3807	2.29	880	50	
				12.1027	273.9	0.3827	2.65	692	40	
				12.1027	273.8	0.3822	2.26	880	50	
$12350-2643$	HD 109454	LSC 50	61412	11.4503	78.4	0.3716	2.86	692	40	
				11.4503	77.0	0.3749	2.72	880	50	
				12.1026	77.4	0.3706	2.75	692	40	
				12.1026	77.0	0.3708	2.73	880	50	
$12394+0734$	HD 110045	YSC 213AB	61754	11.4530	269.0	0.0277	0.00	692	40	
				11.4530	270.0	0.0324	0.13	880	50	
$12394+0734$	HD 110045	YSC 213AB,C	61754	11.4530	238.5	1.5600	...	692	40	
				11.4530	238.5	1.5629	...	880	50	
$12400+1239$	BD+13 2567	HDS 1774	61802	11.4447	64.2	0.4301	3.21	692	40	
				11.4447	64.2	0.4300	3.12	880	50	
$12417-0127$	ADS 8630	STF 1670AB	61941	11.4530	16.6	1.6534	...	692	40	
				11.4530	16.5	1.6556	...	880	50	
$12444+2200$	HD 110789	HDS 1783	62162	12.1027	280.0	0.1500	3.64	692	40	
				12.1027	283.2	0.1549	2.86	880	50	
$12446-2315$	HD 110790	HDS 1784	62183	11.4503	48.1	0.5217	3.25	692	40	
				11.4503	47.9	0.5222	2.85	880	50	
				12.0973	47.8	0.5240	3.09	692	40	
				12.0973	47.6	0.5229	2.66	880	50	
$12478+4539$	BD+46 1820	COU 2104	62440	11.4530	305.5	1.4478	...	692	40	
				11.4530	305.3	1.4459	...	880	50	
$12485-1543$	HD 111312	WSI 74Aa,Ab	62505	11.4530	202.2	0.0493	0.66	692	40	K,*b*
				11.4530	211.0	0.0483	0.92	880	50	K,*b*
				12.0974	110.2	0.0917	1.04	692	40	K
				12.0974	110.7	0.0904	0.94	880	50	K
$12486-1425$	HD 111311	YSC 214	62508	11.4530	161.6	0.8143	3.93	692	40	
				11.4530	161.5	0.8202	3.88	880	50	
$12487+6019$	HD 111456	YSC46Aa,Ab	62512	12.0945	209.3	0.1504	3.25	692	40	
				12.0945	207.0	0.1465	2.53	880	50	
$12493+8226$	HD 111937	HDS 1798	62574	11.4475	325.2	1.1366	...	692	40	
				11.4475	325.1	1.1353	...	880	50	
				12.0973	325.3	1.1328	2.64	692	40	
				12.0973	325.2	1.1299	2.45	880	50	
$12508+0806$	HD 111660	HDS 1803	62697	11.4530	64.0	0.1868	2.59	692	40	
				11.4530	62.7	0.1845	2.28	880	50	
$12510+3129$	HD 111717	HDS 1804	62706	11.4504	258.4	0.7549	3.10	692	40	
				11.4504	258.4	0.7568	2.74	880	50	

Table 2—Continued

WDS (α,δ J2000.0)	HR,ADS HD, or DM	Discoverer Designation	HIP	Date (2000+)	θ (°)	ρ ($''$)	Δm	λ (nm)	$\Delta\lambda$ (nm)
12519 + 2647	BD+27 2181	HDS 1805	62779	11.4503	181.7	0.4705	1.11	692	40
				11.4503	181.7	0.4701	1.04	880	50
				12.1027	182.2	0.4706	0.98	692	40
				12.1027	182.3	0.4703	0.90	880	50
12523 + 4822	HD 111926	YSC 100	62812	11.4558	144.7	0.2618	2.09	692	40
				11.4558	144.5	0.2620	1.94	880	50
				12.1000	145.1	0.2630	2.00	692	40
				12.1000	145.0	0.2621	1.99	880	50
12530 + 1502	HD 111959	YSC 215Aa,Ab	62852	11.4448	70.0	0.1232	3.28	692	40
				11.4448	70.6	0.1267	3.33	880	50
12539 + 2438	HD 112115	YSC 47	62943	11.4448	335.8	0.0843	2.01	692	40
				11.4448	336.6	0.0830	2.10	880	50
				12.1027	338.8	0.0795	1.95	692	40
				12.1027	340.2	0.0837	2.22	880	50
12556 + 5706	...	MLR 553	63091	12.0945	182.7	0.5118	1.11	692	40
				12.0945	182.8	0.5110	0.95	880	50
12565 − 2635	HD 112375	YSC 216	63162	11.4503	355.4	0.1717	1.10	692	40
				11.4503	355.1	0.1723	1.10	880	50
12586 + 4951	HD 234001	HEI 163	63324	11.4530	235.9	0.9629	...	692	40
				11.4530	235.9	0.9647	0.29	880	50
				12.1000	235.5	0.9774	0.45	692	40
				12.1000	235.4	0.9764	0.42	880	50
12591 + 4709	HD 112859	HDS 1821	63368	11.4530	150.4	0.9367	3.61	692	40
				11.4530	150.2	0.9354	3.72	880	50
				12.1000	150.7	0.9497	3.58	692	40
				12.1000	150.6	0.9452	3.70	880	50
12592 + 1454	HD 112791	HDS 1822	63378	11.4448	65.9	0.4076	1.31	692	40
				11.4448	65.8	0.4080	1.31	880	50
13043 + 5227	...	MLR 704	63773	11.4530	36.1	0.4092	1.42	692	40
				11.4530	36.1	0.4088	1.27	880	50
				12.1000	37.0	0.4181	1.64	692	40
				12.1000	36.6	0.4153	1.35	880	50
13055 + 3708	...	HDS 1830	63882	11.4504	170.0	0.4620	0.21	692	40
				11.4504	169.9	0.4602	0.01	880	50
				12.0974	166.0	0.4537	0.42	692	40
				12.0974	166.0	0.4529	0.37	880	50
13064 + 2109	HD 113848	COU 11AB	63948	11.4448	316.4	1.7370	...	692	40
				11.4448	316.4	1.7351	...	880	50
				12.0945	316.1	1.7172	...	692	40
				12.0945	316.1	1.7162	...	880	50
13065 + 7445	HD 114170	LSC 52	63969	11.4475	47.1	0.8407	...	692	40
				11.4475	47.5	0.8441	...	880	50
13069 + 2502	BD+25 2598	HDS 1835	64007	11.4475	199.9	0.5928	3.07	692	40
				11.4475	200.0	0.5909	2.86	880	50
13097 + 4418	HD 114399	COU 1909	64215	12.0974	252.2	0.6544	1.25	692	40

Table 2—Continued

WDS (α,δ J2000.0)	HR,ADS HD, or DM	Discoverer Designation	HIP	Date (2000+)	θ (°)	ρ ($''$)	Δm	λ (nm)	$\Delta\lambda$ (nm)
				12.0974	252.0	0.6527	1.20	880	50
13115 + 4407	BD+44 2254	COU 1910	64363	11.4530	34.4	0.7349	1.90	692	40
				11.4530	34.4	0.7342	1.71	880	50
				12.0974	34.5	0.7377	1.90	692	40
				12.0974	34.4	0.7371	1.67	880	50
13121 + 2415	HD 114724	HDS 1848	64417	12.0945	123.2	0.1575	3.52	692	40
				12.0945	120.6	0.1520	3.91	880	50
13155 + 4051	HD 115271	CHR 180	64692	11.4504	56.8	0.6183	3.06	692	40
				11.4504	57.0	0.6192	2.73	880	50
				12.0974	57.7	0.6180	3.08	692	40
				12.0974	57.6	0.6169	2.73	880	50
13157 + 5424	HD 115348	HDS 1858	64705	11.4558	173.7	0.5401	3.13	692	40
				11.4558	173.7	0.5382	3.33	880	50
				12.0945	173.7	0.5391	3.08	692	40
				12.0945	173.8	0.5377	3.36	880	50
13160 + 6337	HD 115476	HDS 1860	64728	11.4504	209.9	0.2294	0.71	692	40
				11.4504	210.0	0.2291	0.84	880	50
				12.1001	209.6	0.2262	0.72	692	40
				12.1001	209.7	0.2266	0.70	880	50
13175 + 2024	...	YSC 149A,Ba	64836	12.0946	226.1	0.1514	0.62	692	40
				12.0946	226.1	0.1532	1.51	880	50
13175 + 2024	...	YSC 149A,Bb	64836	12.0946	216.2	0.1769	0.67	692	40
				12.0946	216.2	0.1809	1.52	880	50
13180 + 2727	HD 115613	YSC 150	64879	12.0946	301.4	0.2513	2.95	692	40
				12.0946	301.1	0.2505	2.61	880	50
13197 − 0633	HD 115811	HDS 1867	65025	11.4449	119.2	0.2964	2.01	692	40
				11.4449	119.1	0.2966	1.95	880	50
				12.0946	118.5	0.2954	2.05	692	40
				12.0946	118.7	0.2952	1.94	880	50
13198 + 4747	ADS 8862	CHR 193Aa,Ab	65026	11.4531	105.7	0.0376	1.46	692	40
				11.4531	105.9	0.0402	0.92	880	50
				12.1000	105.8	0.0428	1.42	692	40
				12.1000	107.0	0.0432	1.11	880	50
13198 + 4747	ADS 8862	HU 644AB	65026	11.4531	90.4	1.3144	...	692	40
				11.4531	90.4	1.3215	...	880	50
				12.1000	90.2	1.3020	0.97	692	40
				12.1000	90.1	1.2985	0.77	880	50
13203 + 1746	ADS 8863	A 2166	65069	12.1027	354.8	0.1281	0.65	692	40
				12.1027	354.8	0.1295	0.64	880	50
13203 + 6938	HD 116245	YSC 101	65070	11.4504	168.5	0.5852	4.22	692	40
				11.4504	168.1	0.5884	3.73	880	50
				12.1001	167.9	0.5905	4.28	692	40
				12.1001	167.9	0.5897	3.63	880	50
13221 + 3952	HD 116286	HDS 1876	65231	11.4504	90.3	0.2551	2.46	692	40
				11.4504	90.2	0.2559	2.35	880	50

Table 2—Continued

WDS (α,δ J2000.0)	HR,ADS HD, or DM	Discoverer Designation	HIP	Date (2000+)	θ (°)	ρ ($\prime\prime$)	Δm	λ (nm)	$\Delta\lambda$ (nm)
				12.0974	90.4	0.2514	2.45	692	40
				12.0974	90.7	0.2507	2.36	880	50
13225 + 4242	HD 116377	COU 1581	65267	12.0974	158.0	0.3324	1.05	692	40
				12.0974	158.2	0.3325	1.18	880	50
13229 + 1747	HD 116344	YSC 217	65293	11.4557	274.2	0.3956	3.26	692	40
				11.4557	274.2	0.3970	2.85	880	50
13234 + 5754	HD 238224	HDS 1879Aa,Ab	65327	11.4421	214.3	0.3113	2.84	692	40
				11.4421	214.3	0.3118	1.91	880	50
13237 + 1257	BD+13 2661	HDS 1880	65358	12.1027	332.8	0.0920	1.33	692	40
				12.1027	332.6	0.0915	1.21	880	50
13244 − 0419	HD 116545	HDS 1881	65414	12.0946	264.1	0.2941	4.08	692	40
				12.0946	264.6	0.2911	4.13	880	50
13246 + 1451	BD+15 2570	YSC 102	65427	12.1027	70.4	0.1007	2.50	692	40
				12.1027	70.9	0.1008	1.83	880	50
13290 + 4751	HD 117377	YSC 103	65768	12.1001	177.2	0.0550	1.11	692	40
				12.1001	180.1	0.0529	1.04	880	50
13293 + 4847	BD+49 2218	COU 1914	65800	11.4421	183.2	0.4956	0.71	692	40
				11.4421	183.3	0.4936	0.58	880	50
				12.1001	183.3	0.4965	0.64	692	40
				12.1001	183.3	0.4961	0.48	880	50
13294 − 1922	...	HDS 1889	65809	12.0946	66.8	0.2369	0.84	692	40
				12.0946	67.2	0.2360	0.94	880	50
13327 + 2230	BD+23 2581	HDS 1898	66072	11.4558	135.3	0.1534	0.42	692	40
				11.4558	134.9	0.1528	0.37	880	50
13331 + 4315	BD+44 2279	COU 1754	66110	12.0974	108.1	0.0690	1.75	692	40
				12.0974	106.4	0.0684	1.34	880	50
13334 + 5108	HD 118065	COU 2386	66133	11.4421	200.5	1.1572	...	692	40
				11.4421	200.5	1.1537	...	880	50
13344 + 3559	BD+36 2384	HDS 1906	66232	12.0974	26.6	0.2424	3.66	692	40
				12.0974	27.3	0.2402	3.43	880	50
13348 + 4242	HD 118243	HDS 1908	66261	12.0974	29.2	0.4854	2.79	692	40
				12.0974	28.9	0.4847	2.63	880	50
13387 + 6806	HD 119080	HDS 1914	66570	11.4504	294.5	0.1581	1.58	692	40
				11.4504	294.2	0.1582	1.52	880	50
				12.1001	292.2	0.1636	1.57	692	40
				12.1001	292.4	0.1631	1.51	880	50
13396 + 1045	ADS 8987	BU 612AB	66640	12.1027	230.3	0.2758	0.14	692	40
				12.1027	230.1	0.2757	0.13	880	50
13400 + 1235	BD+13 2698	HDS 1917	66665	12.1028	88.1	0.2222	0.89	692	40
				12.1028	88.2	0.2213	0.85	880	50
13417 − 2915	HD 119101	HDS 1922	66818	11.4504	80.9	0.1579	0.63	692	40 [b]
				11.4504	80.2	0.1586	0.56	880	50 [b]
				12.0946	78.5	0.1650	0.65	692	40 [b]
				12.0946	79.8	0.1656	0.65	880	50 [b]
13419 + 1407	HD 119260	HDS 1925	66841	12.1028	219.6	0.2734	2.30	692	40

Table 2—Continued

WDS (α,δ J2000.0)	HR,ADS HD, or DM	Discoverer Designation	HIP	Date (2000+)	θ (°)	ρ ($\prime\prime$)	Δm	λ (nm)	$\Delta\lambda$ (nm)	
				12.1028	219.8	0.2739	2.04	880	50	
13437 + 5949	HD 119799	HDS 1929	66988	12.1001	117.2	0.1456	1.39	692	40	
				12.1001	117.1	0.1442	1.43	880	50	
13445 − 1009	HD 119620	HDS 1932	67047	11.4449	188.4	0.2950	2.44	692	40	
				11.4449	187.7	0.2966	2.24	880	50	
13477 + 2128	BD+22 2632	HDS 1939	67309	12.1027	150.4	1.2899	2.64	692	40	
				12.1027	150.5	1.2837	1.79	880	50	
13488 + 2753	HD 120421	HDS 1942	67397	11.4475	102.6	0.6371	4.11	692	40	
				11.4475	103.0	0.6341	4.53	880	50	
				12.1027	102.5	0.6349	3.89	692	40	
				12.1027	102.1	0.6325	4.03	880	50	
13497 − 2927	HD 120392	HDS 1944	67479	11.4504	265.9	0.3658	2.08	692	40	
				11.4504	265.2	0.3679	2.04	880	50	
				12.0946	265.8	0.3625	2.01	692	40	
				12.0946	265.0	0.3621	2.00	880	50	
13509 + 4531	HD 120829	HDS 1949	67582	12.1001	59.4	0.1024	1.73	692	40	
				12.1001	58.1	0.1057	1.66	880	50	
13514 + 2620	...	YSC 50Aa,Ab	67623	11.4475	216.3	0.2820	0.27	692	40	K
				11.4475	216.4	0.2818	0.06	880	50	K
13554 + 5002	HD 234086	COU 2689	67989	11.4531	326.5	0.6433	2.25	692	40	
				11.4531	326.1	0.6425	2.12	880	50	
				12.0974	326.6	0.6489	2.21	692	40	
				12.0974	326.6	0.6469	2.05	880	50	
13577 + 5355	HD 122007	HDS 1958	68196	12.1001	242.6	0.0823	0.38	692	40	
				12.1001	242.7	0.0823	0.35	880	50	
14001 + 0416	HD 122169	HDS 1965	68392	12.0975	328.1	0.1473	0.23	692	40	
				12.0975	328.1	0.1467	0.27	880	50	
14028 + 1417	HD 122654	HEI 65	68624	11.4558	99.9	0.3421	0.81	692	40	
				11.4558	99.5	0.3423	0.82	880	50	
14070 − 2721	HD 123243	HDS 1981	68961	12.0946	349.5	0.6111	3.98	692	40	
				12.0946	349.5	0.6106	4.03	880	50	
14080 − 0208	HD 123473	YSC 104	69044	12.0975	159.8	0.1513	0.43	692	40	
				12.0975	160.1	0.1518	0.40	880	50	
14089 − 2623	HD 123541	HDS 1984	69119	12.0946	24.5	0.3995	2.89	692	40	
				12.0946	24.0	0.4002	2.54	880	50	
14094 + 1015	HD 123760	RAO 16	69160	11.4558	280.2	0.0302	0.47	692	40	
				11.4558	282.4	0.0318	0.07	880	50	
14104 + 3932	HD 124085	HDS 1986Aa,Ab	69227	12.1001	178.0	0.1536	2.38	692	40	
				12.1001	177.2	0.1509	2.50	880	50	
14104 + 3932	HD 124085	YSC 218Aa,Ac	69227	12.1001	49.7	0.8936	4.35	692	40	
				12.1001	49.8	0.8941	4.12	880	50	
14106 + 0528	BD+06 2844	YSC 52Aa,Ab	69245	12.0975	209.8	0.1326	0.33	692	40	
				12.0975	209.6	0.1330	0.34	880	50	
14106 + 0528	BD+06 2844	HDS 1987Aa,B	69245	12.0975	261.4	0.9658	1.85	692	40	
				12.0975	261.4	0.9582	1.53	880	50	

Table 2—Continued

WDS (α,δ J2000.0)	HR,ADS HD, or DM	Discoverer Designation	HIP	Date (2000+)	θ (°)	ρ ($''$)	Δm	λ (nm)	$\Delta\lambda$ (nm)
14125 + 1636	...	WSI 117	...	11.4422	47.7	0.8761	0.61	692	40
				11.4422	47.9	0.8765	0.80	880	50
14127 + 2349	BD+24 2700	YSC 53	69410	11.4422	127.9	1.1247	...	692	40 K
				11.4422	127.7	1.1263	2.87	880	50 K
				12.1027	129.2	1.1223	4.13	692	40 K
				12.1027	129.2	1.1150	2.81	880	50 K
14129 + 5043	HD 124568	YSC 105	69432	11.4421	208.9	0.5991	3.92	692	40
				11.4421	209.2	0.5946	3.57	880	50
				12.1001	208.9	0.5986	3.91	692	40
				12.1001	208.8	0.5970	3.48	880	50
14136 + 5522	HD 124754	HDS 1995	69488	11.4505	165.5	0.2798	1.90	692	40
				11.4505	165.2	0.2803	1.47	880	50
14138 + 1720	BD+18 2846	YSC 54Aa,Ab	69516	11.4422	3.1	0.1969	2.94	692	40
				11.4422	1.9	0.1894	2.44	880	50
				12.1028	2.8	0.1963	2.96	692	40
				12.1028	2.2	0.2013	2.64	880	50
14138 + 1720	BD+18 2846	HDS 1998Aa,B	69516	11.4422	359.1	0.8875	2.28	692	40
				11.4422	359.0	0.8868	1.98	880	50
				12.1028	359.3	0.8962	2.30	692	40
				12.1028	359.3	0.8963	1.98	880	50
14145 + 2905	HD 124712	YSC 219	69574	11.4476	159.9	0.7482	4.85	692	40
				11.4476	159.7	0.7461	4.33	880	50
14171 − 1835	HD 124990	HDS 2008	69792	11.4531	89.6	0.6518	4.72	692	40
				11.4531	89.9	0.6562	5.39	880	50
14190 − 0636	HD 125354	HDS 2016Aa,Ab	69962	11.4422	83.6	0.2853	0.95	692	40 K
				11.4422	83.4	0.2865	0.67	880	50 K
14222 + 0513	HD 125882	HDS 2023	70233	12.0975	130.1	0.4103	1.55	692	40
				12.0975	130.3	0.4091	1.46	880	50
14237 − 1259	HD 126083	HDS 2027	70357	11.4422	233.0	0.2035	2.05	692	40
				11.4422	232.6	0.2027	1.85	880	50
				12.0946	232.2	0.2014	2.07	692	40
				12.0946	232.5	0.2011	1.88	880	50
14250 + 3730	BD+38 2554	HDS 2029	70478	12.1001	282.2	0.2023	0.64	692	40
				12.1001	282.1	0.2021	0.61	880	50
14258 − 2651	HD 126400	HDS 2030	70538	11.4504	258.6	0.9459	...	692	40
				11.4504	258.6	0.9496	...	880	50
14260 + 4213	HD 126719	COU 1757	70564	12.1001	233.4	0.1243	0.19	692	40
				12.1001	233.4	0.1248	0.20	880	50
14263 + 0152	BD+02 2818	HDS 2033	70582	12.0946	231.5	0.5947	0.66	692	40
				12.0946	231.4	0.5952	0.64	880	50
14277 + 5820	HD 127147	HDS 2039	70709	12.1001	110.9	0.6860	3.73	692	40
				12.1001	110.6	0.6844	3.43	880	50
14293 + 0018	...	HDS 2043Aa,Ab	70845	12.0946	50.5	0.6311	0.35	692	40
				12.0946	50.5	0.6312	0.40	880	50
14301 + 4737	BD+48 2209	COU 2387	70910	11.4505	344.4	0.3749	1.12	692	40

Table 2—Continued

WDS (α,δ J2000.0)	HR,ADS HD, or DM	Discoverer Designation	HIP	Date (2000+)	θ (°)	ρ ($''$)	Δm	λ (nm)	$\Delta\lambda$ (nm)	
				11.4505	344.2	0.3735	1.07	880	50	
				12.1001	344.8	0.3743	1.12	692	40	
				12.1001	344.9	0.3730	1.04	880	50	
$14305+2505$	HD 127386	LSC 55	70935	11.4421	312.3	0.1617	2.77	692	40	
				11.4421	313.0	0.1668	2.47	880	50	
$14313+3955$	HD 127615	HDS 2050	71000	11.4476	279.4	0.1097	0.47	692	40	
				11.4476	279.2	0.1098	0.45	880	50	
				12.0975	278.4	0.1043	0.48	692	40	
				12.0975	278.4	0.1029	0.48	880	50	
$14325+0547$	...	HDS 2053	71108	12.0976	52.5	0.2879	2.58	692	40	K
				12.0976	52.1	0.2875	1.79	880	50	K
$14345+3801$	HD 128197	HDS 2057	71268	11.4449	294.9	0.8148	...	692	40	
				11.4449	294.6	0.8138	3.04	880	50	
				12.1001	294.9	0.8114	3.19	692	40	
				12.1001	294.7	0.8099	2.85	880	50	
$14353+4302$	HD 128387	YSC 55Aa,B	71336	11.4449	303.9	0.5388	2.95	692	40	
				11.4449	303.9	0.5345	2.68	880	50	
				12.0975	305.0	0.5334	2.74	692	40	
				12.0975	304.8	0.5294	2.55	880	50	
$14353+4302$	HD 128387	LSC 56Aa,Ab	71336	11.4449	288.7	0.0433	0.02	692	40	
				11.4449	287.5	0.0450	0.43	880	50	
				12.0975	303.9	0.0372	0.12	692	40	
				12.0975	301.7	0.0376	0.14	880	50	
$14369-0417$	HD 128428	HDS 2061	71462	12.0946	156.1	0.7140	3.48	692	40	
				12.0946	156.1	0.7124	2.96	880	50	
$14376+3137$	HD 128703	HDS 2062	71518	11.4421	160.4	0.1047	0.01	692	40	
				11.4421	160.2	0.1038	0.19	880	50	
				12.1028	154.9	0.1111	0.00	692	40	
				12.1028	154.8	0.1101	0.01	880	50	
$14419+2107$	HD 129430	HDS 2071	71857	11.4422	339.7	0.1230	2.93	692	40	
				11.4422	337.8	0.1232	3.18	880	50	
				12.1028	335.8	0.1184	2.89	692	40	
				12.1028	335.1	0.1189	3.13	880	50	
$14456+1229$	BD+13 2837	HDS 2078	72163	11.4422	43.8	0.5542	1.84	692	40	
				11.4422	43.9	0.5536	1.77	880	50	
				12.1028	43.4	0.5560	1.88	692	40	
				12.1028	43.3	0.5560	1.82	880	50	
$14460+4723$	BD+47 2174	HDS 2079	72191	12.0975	313.6	0.6513	0.50	692	40	
				12.0975	313.6	0.6490	0.40	880	50	
$14469-2924$	CD−28 10938	HDS 2085	72284	11.4422	27.7	0.4076	0.82	692	40	
				11.4422	27.3	0.4035	0.78	880	50	
				12.1002	27.8	0.4067	0.60	692	40	
				12.1002	27.6	0.4082	0.59	880	50	
$14507+3413$	BD+34 2572	LSC 57	72609	11.4476	254.3	0.1044	2.07	692	40	
				11.4476	253.5	0.0993	1.77	880	50	

Table 2—Continued

WDS (α,δ J2000.0)	HR,ADS HD, or DM	Discoverer Designation	HIP	Date (2000+)	θ (°)	ρ ($''$)	Δm	λ (nm)	$\Delta\lambda$ (nm)
$14523-0957$	HD 131181	HDS 2098AB	72745	12.0947	65.8	0.8698	1.61	692	40
				12.0947	65.7	0.8693	1.43	880	50
$14523-0957$	HD 131181	YSC 220Aa,Ab	72745	12.0947	292.2	0.1572	0.12	692	40
				12.0947	292.1	0.1569	0.10	880	50
$14565+1706$	HD 132031	YSC 7	73106	12.1028	345.6	0.3766	2.76	692	40
				12.1028	345.5	0.3769	2.72	880	50
$14573+5832$	HD 238410	HDS 2111	73176	11.4505	266.1	0.2830	2.56	692	40
				11.4505	265.9	0.2838	2.27	880	50
$14590+1537$	HD 132506	YSC 221	73325	11.4558	163.2	0.4220	3.18	692	40
				11.4558	162.4	0.4198	3.00	880	50
$14592-2608$	CD−25 10636	HDS 2115	73339	11.4422	27.3	0.3617	2.30	692	40
				11.4422	27.5	0.3573	2.20	880	50
				12.1003	27.4	0.3667	2.14	692	40
				12.1003	27.3	0.3680	2.04	880	50
$14593+4649$	BD+47 2190	COU 1760	73346	11.4505	248.9	0.2156	0.97	692	40
				11.4505	249.0	0.2156	0.91	880	50
$15000-2009$	HD 132491	YSC 222	73400	12.1003	291.3	0.0381	0.11	692	40
				12.1003	288.6	0.0396	0.51	880	50
$15003+0032$	HD 132660	YSC 107	73419	12.0947	173.6	0.1093	0.70	692	40
				12.0947	173.7	0.1098	0.64	880	50
$15004+5537$	HD 133109	HDS 2117	73436	11.4505	165.7	0.7300	3.31	692	40
				11.4505	165.6	0.7259	3.05	880	50
$15006+0836$	HD 132756	YSC 8	73449	12.0947	317.3	0.0657	0.10	692	40
				12.0947	317.1	0.0653	0.02	880	50
$15010+4543$	HD 133087	HDS 2119	73478	12.1029	119.5	0.3569	2.91	692	40
				12.1029	119.7	0.3550	2.68	880	50
$15016-0828$	HD 132866	HDS 2120	73523	11.4531	336.7	0.0946	0.22	692	40
				11.4531	336.8	0.0948	0.19	880	50
				12.0947	338.6	0.0907	0.17	692	40
				12.0947	338.0	0.0898	0.20	880	50
$15042+3641$	BD+37 2605	HDS 2124	73723	11.4505	255.2	0.3149	3.05	692	40
				11.4505	255.0	0.3151	2.86	880	50
				12.1028	254.4	0.3139	3.10	692	40
				12.1028	254.0	0.3104	3.03	880	50
$15063+5950$	HD 134301	HDS 2127	73915	11.4505	32.1	0.4422	1.22	692	40
				11.4505	32.2	0.4416	1.25	880	50
$15088-2519$	HD 134114	LSC 58	74114	11.4423	254.7	0.6150	3.01	692	40
				11.4423	254.5	0.6156	2.62	880	50
				12.1003	254.0	0.6107	2.85	692	40
				12.1003	253.8	0.6103	2.43	880	50
$15105+4800$	HD 134900	HDS 2131	74257	12.1029	144.0	0.2048	0.13	692	40
				12.1029	143.9	0.2042	0.03	880	50
$15206-0507$	HD 136380	HDS 2156	75084	11.4531	239.3	0.4736	3.65	692	40
				11.4531	239.2	0.4756	3.72	880	50
				11.4533	239.2	0.4730	3.87	692	40

Table 2—Continued

WDS (α,δ J2000.0)	HR,ADS HD, or DM	Discoverer Designation	HIP	Date (2000+)	θ (°)	ρ ($''$)	Δm	λ (nm)	$\Delta\lambda$ (nm)
				11.4533	239.4	0.4723	3.86	880	50
				11.4559	239.3	0.4743	3.79	692	40
				11.4559	239.7	0.4767	3.79	880	50
				12.0947	239.3	0.4771	3.74	692	40
				12.0947	239.0	0.4779	3.97	880	50
15209 + 4540	HD 136795	HDS 2157	75107	12.1029	281.3	0.7153	3.47	692	40
				12.1029	281.3	0.7168	3.52	880	50
15212 + 0523	HD 136565	HDS 2159	75133	12.1029	274.8	0.4540	2.62	692	40
				12.1029	274.9	0.4549	2.46	880	50
15227 − 2254	HD 136678	HDS 2164	75270	11.4423	243.5	0.1649	1.59	692	40
				11.4423	243.9	0.1674	1.46	880	50
				12.0976	242.9	0.1660	1.74	692	40
				12.0976	243.6	0.1631	1.45	880	50
				12.1003	245.0	0.1618	1.58	692	40
				12.1003	244.0	0.1601	1.53	880	50
15243 + 0248	HD 137149	HDS 2165	75392	12.1029	0.8	0.6097	2.98	692	40
				12.1029	0.7	0.6087	2.86	880	50
15245 − 1322	...	HDS 2167	75416	11.4531	119.6	0.2614	0.34	692	40 [K]
				11.4531	119.5	0.2613	0.29	880	50 [K]
				11.4533	119.6	0.2615	0.34	692	40 [K]
				11.4533	119.2	0.2628	0.41	880	50 [K]
				11.4559	119.4	0.2622	0.53	692	40 [K]
				11.4559	119.1	0.2635	0.52	880	50 [K]
				12.0947	117.1	0.2589	0.01	692	40 [K]
				12.0947	117.1	0.2586	0.26	880	50 [K]
15273 + 0306	HD 137690	HDS 2172	75643	11.4531	51.6	0.4799	2.02	692	40
				11.4531	51.6	0.4808	1.75	880	50
				11.4533	51.7	0.4783	2.01	692	40
				11.4533	51.7	0.4797	1.77	880	50
				12.1029	51.6	0.4795	1.97	692	40
				12.1029	51.6	0.4796	1.77	880	50
15273 + 0942	ADS 9643	A 1120	75645	11.4532	329.7	0.2888	0.87	692	40
				11.4532	329.6	0.2891	0.82	880	50
				11.4558	329.7	0.2896	0.88	692	40
				11.4558	329.5	0.2891	0.88	880	50
				11.4559	329.8	0.2882	0.89	692	40
				11.4559	329.5	0.2889	0.85	880	50
				12.1029	330.6	0.2881	0.82	692	40
				12.1029	330.6	0.2878	0.82	880	50
15276 − 1218	HD 137648	HDS 2173	75669	11.4450	243.8	0.3432	1.88	692	40
				11.4450	243.6	0.3441	1.70	880	50
				12.0947	244.2	0.3445	1.83	692	40
				12.0947	244.2	0.3438	1.76	880	50
15278 + 2906	HD 5747	JEF 1	75695	12.1029	327.1	0.0934	1.79	692	40
				12.1029	326.7	0.0947	1.69	880	50

Table 2—Continued

WDS (α,δ J2000.0)	HR,ADS HD, or DM	Discoverer Designation	HIP	Date (2000+)	θ (°)	ρ ($''$)	Δm	λ (nm)	$\Delta\lambda$ (nm)
$15282-0921$	HD 137763	BAG 25Aa,Ab	75718	11.4450	344.5	0.1020	2.57	692	40 [b]
				11.4450	344.7	0.1072	2.12	880	50 [b]
$15282-0626$	HD 137795	HDS 2175	75728	11.4450	31.8	0.2328	2.11	692	40
				11.4450	31.6	0.2335	2.06	880	50
$15298+2857$	BD+29 2674	YSC 223	75869	12.1029	258.6	0.3238	3.17	692	40
				12.1029	258.1	0.3254	2.92	880	50
$15300-1003$	HD 138060	HDS 2181	75882	11.4450	185.8	0.0556	0.87	692	40
				11.4450	186.6	0.0574	1.21	880	50
				12.0947	181.7	0.0636	0.82	692	40
				12.0947	182.2	0.0652	0.82	880	50
$15323+1355$	BD+14 2891	HEI 237	76078	11.4450	168.2	0.3941	0.98	692	40
				11.4450	168.1	0.3937	0.97	880	50
$15337+0921$	HD 138750	YSC 108	76185	11.4450	47.2	0.1972	3.71	692	40
				11.4450	47.7	0.1974	3.56	880	50
$15345+0307$	HD 138834	HDS 2187	76250	11.4532	239.5	0.6464	...	692	40
				11.4532	239.5	0.6474	...	880	50
$15350-1708$	HD 138810	HDS 2188	76287	12.0948	308.0	0.1731	2.13	692	40
				12.0948	308.4	0.1728	2.46	880	50
$15361+0738$	BD+08 3054	HDS 2193	76390	11.4450	246.1	1.4783	...	692	40
				11.4450	246.0	1.4815	...	880	50
$15362-0623$	HD 139059	TOK 301	76400	11.4450	110.1	0.2374	4.50	692	40
				11.4450	109.4	0.2410	4.19	880	50
$15375+5431$	HD 139778	YSC 57	76509	12.1003	42.8	0.9308	5.20	692	40
				12.1003	42.8	0.9297	5.36	880	50
$15379+5005$	HD 139779	HDS 2203	76540	12.1003	321.4	0.0680	1.41	692	40
				12.1003	322.1	0.0655	1.33	880	50
$15383+4842$	BD+49 2413	HDS 2204	76575	12.1003	60.1	0.4228	3.43	692	40
				12.1003	60.0	0.4201	2.46	880	50
$15389-1918$	HD 139446	HDS 2209	76628	12.0948	110.5	0.3860	3.60	692	40
				12.0948	110.2	0.3864	3.84	880	50
$15427+2618$	HDS 9757	STF 1967	76952	12.1030	111.8	0.5915	1.37	692	40
				12.1030	111.7	0.5886	1.31	880	50
$15461+4343$	BD+44 2507	HDS 2219	77229	12.1030	316.9	1.0320	3.45	692	40
				12.1030	317.1	1.0309	3.21	880	50
$15462-2804$	ADS 9775	BU 620AB	77235	12.0948	354.2	0.6236	1.00	692	40 [b]
				12.0948	354.2	0.6263	0.74	880	50 [b]
$15463+0340$	HD 140934	HDS 2220	77240	11.4532	99.1	0.1711	2.76	692	40
				11.4532	98.8	0.1729	2.94	880	50
$15465+5048$	HD 141373	COU 2388	77263	12.1003	219.1	0.1691	0.20	692	40
				12.1003	219.0	0.1690	0.23	880	50
$15465+1957$	...	COU 66	77269	12.1030	91.6	0.5341	0.26	692	40
				12.1030	91.6	0.5328	0.48	880	50
$15470+4143$	HD 141347	HDS 2222	77312	12.1030	135.4	0.0266	0.79	692	40
				12.1030	141.1	0.0224	0.21	880	50
$15481-2513$	HD 141091	HDS 2226	77399	12.0948	154.5	0.0504	0.87	692	40

Table 2—Continued

WDS (α,δ J2000.0)	HR,ADS HD, or DM	Discoverer Designation	HIP	Date (2000+)	θ (°)	ρ ($''$)	Δm	λ (nm)	$\Delta\lambda$ (nm)
				12.0948	152.3	0.0478	0.64	880	50
$15481-1747$	HD 141146	LSC 60	77400	12.0948	306.0	0.6737	3.11	692	40
				12.0948	306.1	0.6762	3.07	880	50
$15488+1243$	...	LSC 61	77455	11.4450	93.5	0.4929	3.75	692	40
				11.4450	93.5	0.4928	3.44	880	50
$15489+2315$	HD 141529	HDS 2227	77459	12.1030	286.1	0.6319	3.31	692	40
				12.1030	286.0	0.6302	2.81	880	50
$15499+0230$	HD 141610	YSC 109	77532	11.4533	82.0	0.0808	2.92	692	40
				11.4533	84.3	0.0869	2.88	880	50
				12.1030	263.9	0.0840	3.13	692	40 [b]
				12.1030	261.1	0.0879	2.85	880	50 [b]
$15507-2632$	HD 141555	HDS 2232	77611	12.0948	201.7	0.2482	2.67	692	40
				12.0948	202.0	0.2475	2.81	880	50
$15521+1053$	BD+11 2874	BAG 7	77725	11.4450	162.1	0.0858	0.13	692	40 [K]
				11.4450	161.9	0.0861	0.20	880	50 [K]
				12.1030	313.5	0.0694	0.06	692	40 [K]
				12.1030	314.0	0.0710	0.08	880	50 [K]
$15560+2013$	...	YSC 223	78033	12.1030	309.5	0.1077	0.73	692	40
				12.1030	309.8	0.1074	0.75	880	50
$16010-1858$	HD 143437	HDS 2257	78454	11.4559	229.6	0.3762	4.00	692	40
				11.4559	228.6	0.3724	3.62	880	50
$16026+2637$	HD 144004	HDS 2262	78572	11.4533	263.2	0.3370	2.58	692	40
				11.4533	262.6	0.3371	2.43	880	50
				11.4559	262.6	0.3376	2.56	692	40
				11.4559	262.5	0.3374	2.54	880	50
$16077-1155$	HD 144726	LSC 62	79021	11.4560	247.4	0.2022	1.83	692	40
				11.4560	246.6	0.2019	1.72	880	50
$16092-2918$	HD 144894	YSC 111	79142	11.4423	204.6	0.2893	2.79	692	40
				11.4423	205.1	0.2918	2.69	880	50
$16093-2156$	HD 144940	HDS 2280	79146	11.4423	179.3	0.4636	2.78	692	40
				11.4423	179.3	0.4646	2.58	880	50
$16168+1447$	HD 146642	HDS 2301	79764	11.4533	55.5	0.9918	...	692	40
				11.4533	55.5	0.9932	...	880	50
				11.4559	55.3	0.9995	...	692	40
				11.4559	55.4	1.0004	...	880	50
$16202-2348$	CD−23 12848	HDS 2308	80029	11.4450	29.6	0.7583	...	692	40
				11.4450	29.6	0.7569	...	880	50
$16223-2422$	HD 147343	HDS 2312	80196	11.4450	245.1	0.3242	1.00	692	40
				11.4450	244.9	0.3245	0.93	880	50
$16248+4441$	HD 148253	YSC 59	80414	11.4560	49.1	0.0643	2.46	692	40
				11.4560	47.3	0.0700	2.07	880	50
$16252+4652$	BD+47 2339	YSC 60	80441	11.4560	289.3	0.6267	4.57	692	40
				11.4560	289.0	0.6325	3.80	880	50
$16304+4044$	HD 149025	HDS 2331	80827	11.4560	278.7	0.5512	3.63	692	40
				11.4560	278.8	0.5520	3.22	880	50

Table 2—Continued

WDS (α,δ J2000.0)	HR,ADS HD, or DM	Discoverer Designation	HIP	Date (2000+)	θ (°)	ρ ($''$)	Δm	λ (nm)	$\Delta\lambda$ (nm)
$16315+7237$	HD 150010	HDS 2334	80920	11.4560	175.2	1.0354	...	692	40
				11.4560	174.8	1.0347	...	880	50
$16325-1739$	HD 148999	HDS 2338	80998	11.4451	332.7	0.1082	0.63	692	40
				11.4451	332.9	0.1087	0.50	880	50
$16380+6910$	HD 150825	HDS 2353	81433	11.4560	205.9	0.3073	1.87	692	40
				11.4560	205.5	0.3074	1.73	880	50
$16383-2254$	HD 149866	HDS 2356	81464	11.4451	254.9	1.0516	...	692	40
				11.4451	254.9	1.0537	...	880	50
$16392+6819$	HD 150982	YSC 113	81539	11.4560	332.7	0.8518	...	692	40
				11.4560	332.0	0.8555	...	880	50
$16403-2354$	HD 150193	HDS 2365	81624	11.4451	226.8	1.1149	...	692	40
				11.4451	226.9	1.1148	...	880	50
$16416+3053$	HD 150710	LSC 66	81726	11.4476	111.0	0.0236	0.53	692	40
				11.4476	110.6	0.0253	0.42	880	50
$16422+3753$	BD+38 2819	HDS 2372	81776	11.4476	245.4	0.1858	1.56	692	40
				11.4476	245.7	0.1860	1.41	880	50
$16442+2331$	ADS 10184	STF 2094AB	81933	11.4476	253.1	1.1624	...	692	40 [b]
				11.4476	253.1	1.1653	...	880	50 [b]
$16576+6027$	BD+60 1722	HDS 2398	82998	11.4477	60.8	0.4785	1.32	692	40
				11.4477	60.9	0.4793	1.26	880	50
$16580+3101$	BD+31 2936	HDS 2400A,Ba	83024	11.4476	86.7	1.3080	...	692	40
				11.4476	86.6	1.3126	...	880	50
$16580+3101$	BD+31 2936	YSC 225A,Bb	83024	11.4476	81.5	1.3198	...	692	40
				11.4476	81.5	1.3214	...	880	50
$17121+4540$	HD 155876	KUI 79AB	84140	11.4560	232.2	1.1382	...	692	40
				11.4560	232.3	1.1390	...	880	50
$17164+4643$	HD 156630	HDS 2442	84492	11.4477	54.7	0.6190	2.89	692	40
				11.4477	54.7	0.6172	2.68	880	50
$17304-0104$	ADS 10598	STF 2173	85667	11.4561	152.5	0.8120	0.72	692	40
				11.4561	152.2	0.8116	0.52	880	50
$17335+5734$	HR 6560	MLR 571	85923	11.4477	330.1	0.0587	0.87	692	40
				11.4477	327.5	0.0581	1.00	880	50
$17393+4715$	HD 160739	HDS 2495	86398	11.4477	63.4	0.1409	3.09	692	40
				11.4477	64.9	0.1408	3.09	880	50
$17471+4737$	HR 6641	CHR 64	87045	11.4477	152.6	0.4067	2.90	692	40
				11.4477	152.4	0.4058	2.57	880	50
$17541+4702$	BD+47 2555	HDS 2525	87641	11.4477	177.7	0.3166	1.96	692	40
				11.4477	177.7	0.3151	1.75	880	50
$17593+4902$	...	YSC 64	88079	11.4477	41.6	0.5063	0.88	692	40
				11.4477	41.8	0.5052	0.65	880	50
$17598+5039$	HD 234530	COU 2390	88119	11.4477	185.1	0.0951	1.07	692	40
				11.4477	184.7	0.0941	1.16	880	50
$18003+0422$	HD 164284	WSI 65	88149	11.4477	166.9	0.1337	2.52	692	40
				11.4477	166.1	0.1387	2.42	880	50
				11.6942	167.0	0.1338	2.48	692	40

Table 2—Continued

WDS (α,δ J2000.0)	HR,ADS HD, or DM	Discoverer Designation	HIP	Date (2000+)	θ (°)	ρ ($\prime\prime$)	Δm	λ (nm)	$\Delta\lambda$ (nm)
				11.6942	166.2	0.1393	2.31	880	50
18026 + 0325	HD 164734	HDS 2539	88355	11.4477	128.3	0.3175	2.84	692	40
				11.4477	128.4	0.3197	3.11	880	50
18065 − 0109	HD 165512	HDS 2552	88698	11.4561	315.4	0.2271	1.86	692	40
				11.4561	315.4	0.2249	1.61	880	50
18106 + 0738	HD 166498	HDS 2562	89059	11.4478	245.0	0.9281	4.24	692	40
				11.4478	245.1	0.9309	4.39	880	50
18122 + 0814	HD 166844	HDS 2568	89195	11.4478	261.8	0.6218	4.11	692	40
				11.4478	261.8	0.6271	4.30	880	50
18133 + 0906	HD 167065	HDS 2573	89301	11.4478	163.4	0.8156	2.63	692	40
				11.4478	163.2	0.8133	2.43	880	50
18280 + 0612	HR 6928	CHR 71	90497	11.4478	245.0	0.0638	0.27	692	40
				11.4478	244.8	0.0637	0.39	880	50
18576 − 1001	HD 175830	HDS 2688	93076	11.4478	198.5	0.2571	1.72	692	40
				11.4478	198.5	0.2566	1.88	880	50
19027 + 4307	HD 177412	YSC 13	93511	12.0948	167.0	0.0892	0.94	692	40 [d]
				12.0948	167.1	0.0892	0.88	880	50 [d]
				12.0948	166.5	0.0888	0.89	692	40 [d]
				12.0948	166.9	0.0893	0.83	880	50 [d]
				12.1030	166.9	0.0900	0.85	692	40 [d]
				12.1030	166.4	0.0905	0.87	880	50 [d]
19254 + 4657	HD 183031	YSC 115	95491	11.4511	311.1	0.0525	1.40	692	40
				11.4511	311.4	0.0535	1.35	880	50
19264 + 4928	HD 183255	YSC 134	95575	11.4511	31.3	0.0291	0.70	692	40
				11.4511	39.7	0.0330	0.78	880	50
19336 + 3846	HR 7436	CHR 87	96195	11.4511	342.8	0.1394	0.10	692	40
				11.4511	342.7	0.1391	0.17	880	50
19380 + 3354	HD 185501	YSC 135	96576	11.4511	351.7	0.0385	0.15	692	40 [b]
				11.4511	350.7	0.0375	0.24	880	50 [b]
				11.4512	352.9	0.0386	0.20	692	40 [b]
				11.4512	352.4	0.0384	0.15	880	50 [b]
19420 + 4015	HR 7499	KUI 94	96907	11.4511	161.0	0.4512	1.46	692	40
				11.4511	160.8	0.4504	1.30	880	50
19467 + 4421	HD 187160	YSC 136	97321	11.4511	87.7	0.0818	1.35	692	40
				11.4511	87.0	0.0814	1.34	880	50
19593 + 4546	HD 189684	HDS 2846	98383	11.4511	231.3	0.3535	2.53	692	40
				11.4511	231.3	0.3539	2.41	880	50
21109 + 2925	...	BAG 29	104565	11.4567	108.8	0.2500	0.75	692	40
				11.4567	108.7	0.2513	0.40	880	50
21116 + 2620	HD 201860	LSC 95	104617	11.4567	294.0	0.0721	1.02	692	40
				11.4567	293.5	0.0721	1.13	880	50
21187 + 2118	BD+20 4883	HDS 3033Aa,Ab	105209	11.4567	318.9	0.0411	0.50	692	40
				11.4567	140.7	0.0409	0.44	880	50 [b]
21336 + 1535	HD 205240	HDS 3067	106451	11.4538	317.2	0.6332	3.07	692	40
				11.4538	316.9	0.6327	2.77	880	50

Table 2—Continued

WDS (α,δ J2000.0)	HR,ADS HD, or DM	Discoverer Designation	HIP	Date (2000+)	θ (°)	ρ ($''$)	Δm	λ (nm)	$\Delta\lambda$ (nm)
21363 + 1627	BD+15 4457	HDS 3076	106667	11.4538	263.7	0.3475	2.16	692	40
				11.4538	263.7	0.3488	2.37	880	50
21379 + 2102	HD 205897	YR 30	106804	11.4538	199.9	0.0273	1.23	692	40 [b]
				11.4538	191.6	0.0341	1.07	880	50 [b]
21501 + 1717	HD 207652	COU 14	107788	11.4538	43.6	0.3218	1.11	692	40
				11.4538	43.5	0.3218	1.13	880	50
21520 + 3857	HD 207967	COU 1823	107934	11.4457	12.8	1.0149	...	692	40
				11.4457	12.9	1.0108	...	880	50
22018 + 1628	...	YSC 165	108752	11.9400	283.6	0.3259	0.10	692	40
				11.9400	283.9	0.3250	0.34	562	40
22041 + 3546	HD 209655	HDS 3133	108934	11.4457	232.4	0.3548	2.19	692	40
				11.4457	232.6	0.3544	1.85	880	50
22051 + 3923	BD+38 4676	YSC 121	109013	11.4457	104.0	1.1035	...	692	40
				11.4457	103.7	1.1084	...	880	50
22107 + 0755	...	WOR 10	109480	11.4430	11.9	0.7793	0.87	692	40 [K]
				11.4430	11.9	0.7780	...	880	50 [K]
22122 + 0828	HD 210718	HDS 3150	109608	11.4430	299.8	0.2400	0.23	692	40
				11.4430	299.7	0.2409	0.13	880	50
22149 + 6143	HD 211401	HDS 3157	109853	11.9428	270.8	0.5311	3.19	692	40
				11.9428	272.1	0.5316	3.56	562	40
22175 + 1649	HD 211542	HEI 192	110064	11.4430	148.0	0.1124	0.79	692	40
				11.4430	147.7	0.1125	0.74	880	50
				11.9401	147.7	0.1079	0.82	692	40
				11.9401	147.7	0.1058	0.87	562	40
22207 + 6006	HD 212152	HDS 3165	110320	11.9428	208.0	0.2259	1.88	692	40
				11.9428	207.9	0.2273	1.99	562	40
22325 + 5902	HD 213758	HDS 3199	111266	11.9428	92.9	0.3517	2.00	692	40
				11.9428	93.2	0.3523	2.11	562	40
22357 + 5312	ADS 16098	A 1470	111528	11.9428	345.9	0.0703	0.00	692	40
				11.9428	346.3	0.0714	0.01	562	40
22358 + 1943	HD 214113	HDS 3209	111535	11.9401	25.6	0.6823	3.69	692	40
				11.9401	25.7	0.6862	3.52	562	40
22375 + 3923	BD+38 4818	HDS 3211AB	111685	11.9429	269.1	0.2926	1.92	692	40
				11.9429	269.2	0.2927	2.12	562	40
22388 + 4419	ADS 16138	HO 295AB	111805	11.9429	331.1	0.1458	0.53	692	40
				11.9429	331.5	0.1437	0.55	562	40
22388 + 4419	ADS 16138	BAG 15Ba,Bb	111805	11.9429	313.5	0.0225	0.84	692	40
				11.9429	319.1	0.0202	0.51	562	40
22409 + 1433	ADS 16173	HO 296AB	111974	11.9401	62.5	0.4680	1.05	692	40
				11.9401	62.6	0.4698	0.94	562	40
22420 + 0946	...	LSC 102	112073	11.9401	74.9	0.1950	2.37	692	40
				11.9401	73.7	0.1962	2.81	562	40
22436 + 4226	BD+41 4591	COU 1989	112214	11.9429	1.8	0.3935	1.56	692	40
				11.9429	2.2	0.3931	1.78	562	40
22474 + 1749	HD 215775	WSI 93	112506	11.9401	310.4	0.2592	2.61	692	40 [b]

Table 2—Continued

WDS (α,δ J2000.0)	HR,ADS HD, or DM	Discoverer Designation	HIP	Date (2000+)	θ (°)	ρ ($\prime\prime$)	Δm	λ (nm)	$\Delta\lambda$ (nm)
				11.9401	310.7	0.2582	2.97	562	40 [b]
22493 + 1517	HD 216027	HDS 3241	112695	11.9401	243.8	0.0940	2.21	692	40
				11.9401	244.2	0.0934	2.51	562	40
22537 + 2558	BD+25 4836	HDS 3254	113055	10.7170	312.7	0.2169	0.53	692	40
				10.7170	312.7	0.2177	0.66	880	50
				10.7194	313.0	0.2164	0.48	692	40
				10.7194	313.1	0.2166	0.62	562	40
				10.8095	313.3	0.2143	0.57	692	40
				10.8095	313.2	0.2164	0.60	880	50
22540 + 2657	...	YSC 225A,Ba	113069	10.7170	96.1	0.3929	3.02	692	40
				10.7170	95.8	0.3918	2.28	880	50
				10.7194	96.3	0.3914	2.91	692	40
				10.7194	95.0	0.3964	3.18	562	40
22540 + 2657	...	YSC 225A,Bb	113069	10.7170	106.5	0.4262	3.33	692	40
				10.7170	106.5	0.4266	2.28	880	50
				10.7194	106.4	0.4267	3.22	692	40
				10.7194	104.7	0.4258	3.60	562	40
22551 + 4427	HD 216766	HDS 3260	113175	11.9429	331.3	0.0990	0.91	692	40
				11.9429	332.4	0.0996	1.22	562	40
23013 + 4412	HD 217587	YSC 166	113665	11.9429	156.0	0.2152	1.50	692	40
				11.9429	156.2	0.2152	1.56	562	40
23016 + 4531	HD 217635	LSC 104	113690	10.7197	345.1	0.1312	2.22	692	40
				10.7197	344.8	0.1325	2.00	562	40
23019 + 4220	HR 8762		113726	10.7197	196.4	0.1721	1.99	692	40
				10.7197	196.1	0.1723	2.26	562	40
				11.9429	192.3	0.1856	2.30	692	40
				11.9429	192.5	0.1865	2.31	562	40
23027 + 2308	HD 217783	YSC 227	113800	10.7170	168.9	0.0305	2.56	692	40
				10.7170	353.6	0.0299	2.01	880	50
23031 + 0456	HD 217801	HDS 3284	113832	11.9429	249.2	0.7154	2.20	692	40
				11.9429	249.3	0.7175	2.47	562	40
23038 + 0237	HD 217876	YSC 228	113879	11.9429	227.1	1.2791	...	692	40
				11.9429	227.3	1.2845	...	562	40
23049 + 0753	HD 218055	YR 31	113974	11.9429	40.4	0.1220	1.85	692	40
				11.9429	40.9	0.1205	1.90	562	40
23064 + 1236	...	HDS 3291Aa,Ab	114088	11.6891	323.0	0.4372	0.92	692	40
				11.6891	322.7	0.4337	1.62	880	50
23084 − 2849	HD 218434	HDS 3295	114254	11.9430	93.6	0.1642	2.75	692	40 [b]
				11.9430	90.0	0.1669	3.13	562	40 [b]
23097 + 4839	BD+47 4056	HDS 3298	114363	11.9402	146.8	0.1145	0.24	692	40 [b]
				11.9402	146.9	0.1143	0.28	562	40 [b]
23107 + 0947	HD 218793	HDS 3302	114444	11.6891	331.9	0.3106	1.76	692	40
				11.6891	331.9	0.3100	1.67	880	50
23112 + 0309	HD 218845	LSC 105	114488	11.9429	173.2	0.0944	2.37	692	40
				11.9429	173.1	0.0905	2.45	562	40

Table 2—Continued

WDS (α,δ J2000.0)	HR,ADS HD, or DM	Discoverer Designation	HIP	Date (2000+)	θ (°)	ρ ($''$)	Δm	λ (nm)	$\Delta\lambda$ (nm)
23120 + 3542	BD+34 4864	LSC 106	114539	10.7197	290.4	0.0463	0.66	692	40 [b]
				10.7197	288.1	0.0443	0.61	562	40 [b]
23121 + 2656	BD+26 4581	HDS 3305	114543	10.7170	168.5	1.3058	2.17	692	40
				10.7170	168.0	1.3090	1.20	88	40
				10.7194	168.6	1.3159	...	692	40
				10.7194	168.6	1.3185	...	562	40
				10.8095	168.9	1.2975	...	692	40
				10.8095	168.9	1.2960	...	880	50
23167 + 3441	BD+33 4679	HDS 3315	114927	10.7197	206.1	0.2225	0.52	692	40
				10.7197	206.0	0.2230	0.45	562	40
				11.9402	204.0	0.2220	0.43	692	40
				11.9402	204.1	0.2229	0.45	562	40
23188 + 7025	BD+69 1326	HDS 3320	115097	11.9428	306.6	1.0431	...	692	40
				11.9428	306.9	1.0360	...	562	40
23227 + 0344	HD 220319	LSC 108	115412	11.6891	122.4	0.4456	4.61	692	40
				11.6891	123.1	0.4502	4.27	880	50
23237 − 2835	HD 220413	HDS 3330	115490	11.9430	225.2	0.2582	0.87	692	40
				11.9430	224.8	0.2629	1.28	562	40
23244 + 1429	HD 220541	BU 719AB	115552	11.6891	337.9	1.3349	...	692	40
				11.6891	338.0	1.3330	...	880	50
23253 + 0309	...	LSC 109	115618	11.6891	95.0	0.4226	2.75	692	40
				11.6891	94.8	0.4311	2.35	880	50
23257 + 2457	HD 220694	HDS 3335	115646	10.7170	20.1	0.7420	4.14	692	40
				10.7170	19.8	0.7434	3.93	880	50
				10.7194	20.2	0.7470	4.22	692	40
				10.7194	20.2	0.7466	4.57	562	40
				10.8096	20.6	0.7384	4.06	692	40
				10.8096	20.7	0.7392	3.87	880	50
23267 + 4103	HD 220834	COU 1845	115723	11.9402	358.7	0.9252	2.48	692	40
				11.9402	358.8	0.9281	2.60	562	40
23267 + 4520	HD 220821	YR 17Aa,Ab	115715	11.9402	216.4	0.4467	3.17	692	40
				11.9402	216.5	0.4488	3.64	562	40
23285 + 0926	HD 221026	YSC 138	115871	11.6891	61.2	0.0721	1.39	692	40
				11.6891	65.6	0.0709	1.48	880	50
23310 + 0744	HD 221295	YSC 76	116058	10.7170	165.3	0.5170	3.07	692	40
				10.7170	165.1	0.5213	2.60	880	50
				11.6891	163.6	0.5191	3.29	692	40
				11.6891	163.5	0.5180	2.88	880	50
23322 + 1458	BD+14 5006	HDS 3353	116167	10.7170	77.5	0.2098	1.29	692	40
				10.7170	76.9	0.2080	1.26	880	50
				11.6891	77.6	0.2045	1.05	692	40
				11.6891	77.7	0.2078	1.07	880	50
23334 + 4251	HD 221613	HDS 3356	116259	11.6837	359.7	0.1346	2.06	692	40
				11.6837	0.0	0.1344	1.89	880	50
				11.9402	3.2	0.1245	1.99	692	40

Table 2—Continued

WDS (α,δ J2000.0)	HR,ADS HD, or DM	Discoverer Designation	HIP	Date (2000+)	θ (°)	ρ ($''$)	Δm	λ (nm)	$\Delta\lambda$ (nm)
				11.9402	3.0	0.1301	2.26	562	40
$23338-0508$	HD 221630	HDS 3357	116294	11.6891	73.8	0.7357	...	692	40
				11.6891	73.9	0.7378	...	880	50
$23347+3748$	HD 221757	YSC 139	116360	10.7197	271.2	0.0327	0.50	692	40 [c]
				10.7197	274.2	0.0331	0.60	562	40 [c]
				11.6837	273.6	0.0332	0.46	692	40
				11.6837	274.7	0.0314	0.02	880	50
$23355+5401$	HD 221875	MLR 620	116425	10.7198	226.2	0.5826	1.32	692	40
				10.7198	226.0	0.5810	1.51	562	40
				11.6946	226.5	0.5805	1.34	692	40
				11.6946	226.7	0.5791	1.48	880	50
$23361+1827$	HD 221914	YSC 229	116478	11.6864	336.4	0.0162	0.02	692	40
				11.6864	344.7	0.0253	0.81	880	50
$23371+5759$	HD 240339	HDS 3360	116538	10.7198	129.2	1.2045	...	692	40
				10.7198	129.0	1.2039	...	562	40
$23393-2155$	HD 222281	HDS 3361	116721	11.6837	266.5	0.4885	3.21	692	40
				11.6837	266.6	0.4925	2.93	880	50
$23393+4543$	ADS 16904	A 643AB	116726	11.9402	305.6	0.2270	0.45	692	40 [b]
				11.9402	305.9	0.2256	0.42	562	40 [b]
$23397-0044$	HD 222342	YR 18	116756	11.6891	247.3	0.2109	2.82	692	40
				11.6891	248.3	0.2074	2.25	880	50
				11.9429	245.8	0.2060	2.63	692	40
				11.9429	246.8	0.2070	2.99	562	40
$23400+4943$	HD 222408	HDS 3362	116779	10.7198	33.5	0.7569	2.79	692	40
				10.7198	33.2	0.7594	3.07	562	40
				11.6946	33.3	0.7640	...	692	40
				11.6946	33.6	0.7625	...	880	50
				11.9402	33.0	0.7635	2.80	692	40
				11.9402	33.0	0.7706	3.13	562	40
$23411+4613$	HD 222516	MLR 4	116849	10.7198	71.8	0.0862	0.11	692	40
				10.7198	71.5	0.0860	0.00	562	40
				11.6946	94.1	0.1104	0.32	692	40
				11.6946	94.1	0.1105	0.26	880	50
				11.9430	97.9	0.1133	0.20	692	40
				11.9430	98.2	0.1130	0.20	562	40
$23416+2413$	HD 222572	LSC 110	116888	11.6864	65.6	0.2898	3.01	692	40
				11.6864	65.6	0.2910	2.73	880	50
$23417+4825$	HD 222590	HDS 3366	116895	10.7198	252.3	0.0219	1.68	692	40 [c]
				10.7198	252.4	0.0161	0.03	562	40 [c]
				11.6946	89.0	0.0267	0.80	692	40 [b]
				11.6946	276.3	0.0305	1.17	880	50
				11.9430	274.6	0.0274	0.10	692	40
				11.9430	275.2	0.0282	0.00	562	40
$23423+8528$	HD 222874	HDS 3368	116945	10.7225	29.6	1.0547	...	692	40
				10.7225	29.4	1.0471	...	880	50

Table 2—Continued

WDS (α,δ J2000.0)	HR,ADS HD, or DM	Discoverer Designation	HIP	Date (2000+)	θ (°)	ρ ($''$)	Δm	λ (nm)	$\Delta\lambda$ (nm)
23443 + 3620	HD 222858	HDS 3373	117094	11.6837	248.4	0.6326	3.03	692	40
				11.6837	248.4	0.6329	2.69	880	50
23445 + 0830	HD 222876	HDS 3374	117110	10.7171	40.5	0.6426	2.86	692	40
				10.7171	40.2	0.6408	2.71	880	50
23454 + 3212	HD 222961	LSC 111	117175	11.6837	354.7	0.0826	1.82	692	40
				11.6837	355.7	0.0820	1.60	880	50
23456 + 1309	HD 222995	HJL 1116	117186	10.7171	82.5	0.0150	1.40	692	40
				10.7171	77.9	0.0142	0.02	880	50
23460 + 4625	HD 223047	MCA 75Aa,Ac	117221	10.7198	277.4	0.3407	4.21	692	40
				10.7198	277.0	0.3410	3.53	562	40
				11.9431	275.7	0.3427	4.10	692	40
				11.9431	276.0	0.3400	3.57	562	40
23480 − 1930	HD 223254	HDS 3380	117377	11.6837	6.6	0.1013	2.09	692	40
				11.6837	7.6	0.1059	2.07	880	50
23485 + 2539	HD 223323	DSG 8	117415	11.6864	303.4	0.0375	0.03	692	40
				11.6864	306.1	0.0378	0.00	880	50
23495 − 0533	HD 223439	LSC 112	117495	11.6891	357.0	0.1888	2.25	692	40
				11.6891	357.0	0.1876	2.58	880	50
23512 + 4433	HD 223627	YSC 77	117615	10.7198	99.9	0.8990	4.88	692	40
				10.7198	99.7	0.9028	...	562	40
				11.9402	99.7	0.8942	4.88	692	40
				11.9402	100.4	0.8908	4.85	562	40
23514 + 0919	HD 223637	YSC 230	117628	10.7171	274.9	0.0226	1.98	692	40 [a]
				10.7171	95.3	0.0269	1.61	880	50 [a]
23522 − 1143	HD 223728	LCS 113	117696	11.6892	86.1	0.1595	2.55	692	40
				11.6892	87.7	0.1603	2.10	880	50
23526 + 1057	HD 223781	YSC 17A,Ba	117730	10.7171	355.8	0.6229	3.90	692	40
				10.7171	355.9	0.6271	3.68	880	50
23526 + 1057	HD 223781	YSC 17A,Bb	117730	10.7171	356.3	0.5626	4.02	692	40
				10.7171	356.5	0.5652	3.71	880	50
23554 + 5053	HD 236246	LSC 114	117934	10.7198	55.8	0.0347	0.49	692	40 [a]
				10.7198	232.8	0.0342	0.39	562	40 [a]
23551 + 2023	HD 224087	YSC 140	117918	11.6864	91.2	0.0587	1.18	692	40
				11.6864	90.0	0.0606	1.19	880	50
23557 + 4318	HD 224167	COU 1498AB	117971	11.6837	194.7	0.1520	0.79	692	40 [b]
				11.6837	194.9	0.1534	0.68	880	50 [b]
				11.9402	194.1	0.1524	0.82	692	40 [b]
				11.9402	194.1	0.1526	0.97	562	40 [b]
23557 + 4318	HD 224167	YSC 231AB,C	117971	11.6837	346.6	1.2270	...	692	40
				11.6837	346.6	1.2272	...	880	50
				11.9402	346.4	1.2224	...	692	40
				11.9402	346.5	1.2243	...	562	40
23563 + 1001	HD 224250	LSC 115AB	118015	10.7171	305.0	0.0405	1.25	692	40
				10.7171	301.7	0.0408	1.02	880	50
23563 + 1001	HD 224250	LSC 115AC	118015	10.7171	134.2	0.3533	2.78	692	40

Table 2—Continued

WDS (α,δ J2000.0)	HR,ADS HD, or DM	Discoverer Designation	HIP	Date (2000+)	θ (°)	ρ ($''$)	Δm	λ (nm)	$\Delta\lambda$ (nm)
				10.7171	134.2	0.3541	2.56	880	50

[a]Quadrant ambiguous.

[b]Quadrant inconsistent with previous measures in the 4th Interferometric Catalog.

[c]These measures were previously published in Horch *et al.* 2011b; this reanalysis should replace the previous values.

[d]These measures were previously published in Appourchaux *et al.* 2015; this reanalysis should replace the previous values.

[K]This star is a member of the nearby K-dwarf sample discussed in the text.

Table 3. Ephemeris Positions and Residuals Used in the Astrometric Accuracy Study

WDS	Discoverer Designation	HIP	Date (2000+)	θ_{eph} (°)	ρ_{eph} ($''$)	$\Delta\bar{\theta}$ (°)	$\Delta\bar{\rho}$ (mas)	WDS Orbit Grade and Reference
01297 + 2250	A 1910AB	6966	10.7173	184.2 ± 2.4	0.1846 ± 0.0058	+1.1	−5.5	2, Hartkopf *et al.* 1996
02020 + 7054	BU 513AB	9480	10.7145	(301.6 ± 4.9)	0.6496 ± 0.0041	(+1.0)	−2.7	2, DeRosa *et al.* 2012
		9480	11.6839	(306.3 ± 4.9)	0.6299 ± 0.0042	(+0.9)	−2.9	2, DeRosa *et al.* 2012
02022 + 3643	A 1813AB	9500	10.7200	356.6 ± 0.9	0.1647 ± 0.0017	−0.2	−3.1	2, Hartkopf *et al.* 2000
02157 + 2503	COU 79	10535	10.7174	60.7 ± 0.3	0.1038 ± 0.0016	+0.5	−1.8	2, Muterspaugh *et al.* 2010b
		10535	11.6893	52.2 ± 0.1	0.1600 ± 0.0013	+0.4	−0.6	
02262 + 3428	HDS 318	11352	10.7200	(160.7 ± 5.2)	0.0928 ± 0.0060	(−4.3)	−4.8	2, Balega *et al.* 2005
02366 + 1227	MCA 7	12153	12.0962	(326.5 ± 8.1)[a]	0.0781 ± 0.0059	(+0.7)	−6.1	1, Docobo *et al.* 2016
02399 + 0009	A 1928	12421	10.8101	(128.0 ± 19.9)	0.0737 ± 0.0049	(−0.2)	+4.8	2, Docobo & Ling 2009
02424 + 2001	BLA 1Aa,Ab	12640	10.7118	(312.4 ± 5.3)	0.0385 ± 0.0032	(+1.3)	−2.9	2, Mason 1997
03014 + 0615	HDS 385	14075	11.6840	(299.3 ± 4.7)	0.0603 ± 0.0017	(−7.6)	2.7	2, Tokovinin *et al.* 2015
04136 + 0743	A 1938	19719	11.6895	4.7 ± 0.3	0.0562 ± 0.0002	−0.6	−1.0	1, Muterspaugh *et al.* 2010a
04357 + 1010	CHR 18Aa,Ab	21402	12.0937	9.2 ± 2.8	0.1082 ± 0.0049	−1.2	+0.5	2, Lane *et al.* 2007
		21402	12.0965	9.3 ± 2.8	0.1080 ± 0.0050	−0.7	−2.1	
04464 + 4221	COU 2031	22196	10.7148	342.1 ± 2.2	0.0593 ± 0.0059	−0.8	−0.8	2, Docobo *et al.* 2014
		22196	10.7202	342.1 ± 2.2	0.0591 ± 0.0059	−1.1	−1.0	
		22196	11.6895	(26.0 ± 17.4)	0.0217 ± 0.0037	(+0.3)	−0.7	
05072 − 1924	FIN 376	23818	10.8131	231.8 ± 1.5	0.0332 ± 0.0025	+5.7	−1.4	2, Tokovinin *et al.* 2014
06098 − 2246	RST 3442	29234	12.0966	88.3 ± 1.1	0.2153 ± 0.0019	−0.5	+2.3	2, Hartkopf *et al.* 1996
06171 + 0957	FIN 331Aa,Ab	29850	12.0994	(100.3 ± 4.4)	0.0594 ± 0.0032	(+4.5)	+1.3	1, Hartkopf *et al.* 1996
06314 + 0749	A 2817	31089	12.0994	(312.33 ± 16.40)	0.1262 ± 0.0074	(+2.2)	+0.4	2, Tokovinin *et al.* 2015
07480 + 6018	HU 1247	38052	10.8161	72.8 ± 1.3	0.1482 ± 0.0023	−1.5	+2.0	2, Hartkopf *et al.* 1996
		38052	12.0968	51.3 ± 1.1	0.1743 ± 0.0013	−1.3	−1.7	
07508 + 0317	A 2880	38300	10.8160	(151.1 ± 5.3)	0.1442 ± 0.0053	(−3.9)	−0.7	2, Hartkopf *et al.* 2000
13198 + 4747	HU 644AB	65026	11.4531	90.4 ± 0.2	(1.3021 ± 0.0118)	+0.0	(+15.9)	2, Hartkopf & Mason 2015
		65026	12.1000	89.9 ± 0.2	(1.2469 ± 0.0150)	+0.3	(+53.4)	
13203 + 1746	A 2166	65069	12.1027	357.4 ± 5.8	(0.1323 ± 0.0258)	−2.6	(−3.5)	2, Zasche & Uhlar 2010
13396 + 1045	BU 612AB	66640	12.1027	230.6 ± 0.9	0.2754 ± 0.0018	−0.4	+0.4	1, Mason *et al.* 1999
15278 + 2906	JEF 1	75695	12.1029	327.1 ± 0.3	0.0938 ± 0.0001	−0.2	+0.3	1, Muterspaugh *et al.* 2010a
15427 + 2618	STF 1967	76952	12.1030	111.2 ± 0.2	(0.5919 ± 0.0165)	+0.5	(−1.9)	2, DeRosa *et al.* 2012
17121 + 4540	KUI 79AB	84140	11.4560	232.5 ± 1.7	1.1350 ± 0.0065	−0.2	+3.6	2, Hartkopf *et al.* 1996
21501 + 1717	COU 14	107788	11.4538	43.3 ± 0.1	0.3245 ± 0.0004	+0.3	−2.7	2, Muterspaugh *et al.* 2010a
22388 + 4419	HO 295AB	111805	11.9429	332.5 ± 2.0	(0.1582 ± 0.0309)	−1.2	(−13.5)	2, Horch *et al.* 2015
22409 + 1433	HO 296AB	111974	11.9401	63.2 ± 0.1	0.4699 ± 0.0001	−0.7	−1.0	1, Muterspaugh *et al.* 2010a
23411 + 4613	MLR 4	116849	10.7198	75.4 ± 2.7	0.0868 ± 0.0025	−3.7	−0.7	2, Hartkopf *et al.* 1996
		116849	11.6946	97.3 ± 1.8	0.1108 ± 0.0019	−3.2	−0.4	
		116849	11.9430	101.6 ± 1.7	0.1155 ± 0.0017	−3.5	−2.4	

[a]Figures in parentheses did not meet the criteria explained in the text for comparison.

Table 4. 5-σ Detection Limits for Unresolved Stars

WDS (α,δ J2000.0)	HIP	Date (2000+)	5-σ Det. Lim., Ch. A λ (nm)	0.2″	1.0″	5-σ Det. Lim., Ch. B λ (nm)	0.2″	1.0″	Comment
00043 + 4007	344	10.7143	692	2.95	6.52	562	3.84	5.67	HIP suspected double.
00302 + 5428	2364	10.7143	692	3.66	4.51	562	3.25	4.38	HIP suspected double.
00400 + 1016	3150	10.7116	692	3.02	4.80	562	3.60	4.92	HIP suspected double.
00513 − 0924	3995	10.7172	692	3.71	6.29	880	3.10	5.85	G-C SB2.
		11.6838	692	3.55	6.74	880	3.21	7.02	
00516 − 0849	4031	10.7172	692	3.89	6.54	880	3.17	6.45	HIP suspected double.
		11.6838	692	3.64	6.98	880	3.56	7.07	
00522 − 0950	4071	10.7172	692	3.90	6.17	880	3.59	5.30	HIP suspected double.
		11.6838	692	3.91	6.90	880	3.46	7.19	
01002 + 1156	4687	11.6947	692	3.99	5.89	880	4.33	5.81	G-C SB2.
01024 − 1025	4845	11.6838	692	4.20	5.64	880	3.65	6.17	HIP suspected double. K-dwarf.
01051 + 1457	5081	11.9432	692	4.13	7.27	562	4.37	6.31	YSC 124Aa,Ab.
01116 + 3231	5579	11.9402	692	4.56	6.40	562	4.01	5.15	HIP suspected double.
01156 + 0846	5888	10.7172	692	4.22	5.49	880	3.48	5.72	OCC 479; HIP suspected double.
		11.6867	692	3.58	6.74	880	3.57	6.19	
01179 + 0529	6069	10.7172	692	3.48	4.60	880	3.32	4.95	HIP suspected double.
01211 + 0736	6307	10.7116	692	3.92	5.02	562	3.84	4.48	HIP suspected double.
		11.6867	692	3.80	5.92	880	3.59	6.34	
01222 + 4208	6398	11.6838	692	4.39	6.35	880	4.27	6.76	HDS 178.
01228 + 0043	6448	10.7117	692	3.74	4.93	562	3.78	4.46	HIP suspected double.
01243 + 0426	6555	10.7117	692	3.83	4.47	562	3.56	3.97	HIP suspected double.
01245 + 2202	6577	10.7173	692	3.68	4.88	880	3.68	5.13	G-C SB2.
01256 + 3133	6675	11.6919	692	4.01	5.73	880	4.49	5.65	G-C SB2.
01308 + 2311	7048	10.7173	692	3.92	5.84	880	3.58	6.04	HDS 197, also unresolved in 2010.
01320 + 5712	7141	10.7198	692	3.17	4.18	562	3.34	4.41	YSC 25, also unresolved in 2014.
01394 + 0211	7722	10.7117	692	3.86	4.80	562	3.86	4.57	HIP suspected double.
01410 + 3816	7854	11.6920	692	3.08	4.59	880	2.98	4.57	HIP suspected double.
01413 + 2545	7874	10.7173	692	4.21	6.28	880	3.63	6.78	STF 145A, G-C SB2.
		11.6920	692	3.26	6.13	880	4.08	6.05	
		11.9404	692	4.18	6.97	562	4.45	5.93	
01491 + 6647	8458	10.7198	692	3.58	4.44	562	3.72	4.14	HDS 243, also unresolved in 1997.
01511 + 4332	8615	10.7200	692	4.08	5.86	562	4.61	6.10	HIP suspected double.
01533 + 2327	8817	10.7173	692	2.66	3.94	880	2.93	4.56	HIP suspected double.
01577 + 2748	9132	10.7173	692	4.36	6.66	880	3.22	7.07	HIP suspected double.
		11.9404	692	4.29	7.27	562	3.98	6.11	
01581 + 3108	9171	11.6920	692	4.12	5.99	880	4.04	6.27	HIP suspected double.
02021 + 0356	9488	10.8101	692	4.27	5.37	880	3.66	5.79	HIP suspected double. K-dwarf.
02049 + 0744	9706	10.8100	692	3.88	6.72	880	4.29	6.67	Previously unresolved.
02063 + 2036	9815	10.7174	692	4.31	5.92	880	3.28	4.64	G-C SB2.
		11.9404	692	3.90	6.10	562	3.72	5.21	
02106 + 1930	10155	10.7174	692	4.04	7.34	880	3.49	6.03	OCC 209; HIP suspected double.
02124 + 3018	10280	11.6893	692	4.25	6.22	880	4.03	6.17	G-C SB2.
02168 + 0235	10631	10.7117	692	3.48	3.89	562	3.87	4.84	G-C SB2.
02170 + 3413	10644	10.7200	692	4.49	6.36	562	4.63	6.90	MKT 5Aa,Ab; G-C SB2.
		11.6893	692	4.00	5.96	880	3.40	6.00	
02317 + 6526	11754	11.6949	692	3.46	5.27	880	3.72	5.25	HIP suspected double.
02349 + 6716	12012	11.6949	692	3.54	5.41	880	4.21	5.66	HIP suspected double.
02365 + 1743	12142	10.7118	692	3.33	3.91	562	2.93	3.28	HIP suspected double.
02405 + 6114	12469	10.7201	692	2.96	4.27	562	3.29	4.13	FAL 4A; HIP suspected double.
02450 + 1227	12832	10.8100	692	4.28	6.87	880	3.82	6.87	UV Ari; occultation binary.
02461 + 2841	12916	10.7118	692	3.48	4.46	562	3.21	3.36	HIP suspected double.
02512 + 0426	13306	10.8101	692	4.10	6.56	880	3.65	6.61	G-C SB2.
		11.6840	692	4.24	6.14	880	3.99	5.94	
02527 + 0543	13410	10.7119	692	3.14	3.78	562	3.05	3.89	HIP suspected double. K-dwarf.
		11.6840	692	4.38	5.49	880	3.58	5.68	
02523 + 0156	13386	10.8101	692	3.55	6.70	880	3.09	6.82	HIP suspected double.
		11.6840	692	4.46	5.70	880	3.79	5.74	
02533 + 6027	13457	10.7201	692	3.31	4.63	562	3.57	4.73	HIP suspected double.
		11.6867	692	3.89	5.76	880	3.23	5.64	
02568 + 6553	13731	10.7201	692	3.29	4.50	562	3.41	4.37	HIP suspected double.
03064 + 0316	14443	12.0990	692	4.59	7.06	880	3.25	6.71	G-C SB2.
03083 + 4412	14582	10.7146	692	4.20	5.82	562	4.27	6.88	G-C SB2.
		11.9406	692	4.32	6.07	562	4.07	5.14	
03117 + 1109	14843	12.0991	692	3.14	5.97	880	2.94	6.23	HIP suspected double.
03122 + 4623	14892	10.8157	692	4.35	7.10	880	4.04	6.84	G-C SB2.
		11.6920	692	3.26	4.80	880	2.87	4.86	

Table 4—Continued

WDS (α,δ J2000.0)	HIP	Date (2000+)	5-σ Det. Lim., Ch. A λ (nm)	$0.2''$	$1.0''$	5-σ Det. Lim., Ch. B λ (nm)	$0.2''$	$1.0''$	Comment
		11.9406	692	4.13	5.66	562	3.90	4.80	
03126 + 6914	14932	11.6867	692	3.98	5.35	880	3.36	5.52	HDS 411.
03142 + 6614	15069	10.7201	692	3.27	4.52	562	3.69	4.47	HIP suspected double.
		11.6867	692	4.13	5.47	880	3.22	4.80	
03196 + 5343	15492	10.7201	692	3.45	5.01	562	3.66	4.81	G-C SB2.
		11.6921	692	3.67	4.97	880	3.19	4.95	
		11.9406	692	3.94	5.65	562	3.82	4.33	
03228 + 6002	15742	10.7201	692	3.95	5.47	562	3.89	4.94	HIP suspected double.
		11.6867	692	4.00	6.40	880	3.37	5.65	
03240 + 1954	15838	10.7175	692	4.02	6.03	880	3.78	6.27	HIP suspected double.
03294 + 1514	16246	10.7120	692	3.74	4.58	562	3.53	4.52	HIP suspected double.
03318 + 1419	16445	10.7120	692	3.12	3.47	562	2.61	3.44	HIP suspected double.
03321 + 4340	16467	10.7147	692	4.07	5.40	562	4.31	6.59	HIP suspected double.
		11.6893	692	4.43	6.48	880	3.89	5.77	
03345 + 4549	16667	10.7147	692	3.54	4.76	562	4.03	5.56	HIP suspected double.
03349 + 0322	16698	10.7175	692	3.99	5.10	880	3.89	5.29	HIP suspected double.
03384 + 1509	16985	10.7120	692	4.02	5.20	562	3.91	4.86	HIP suspected double.
03391 + 5249	17033	12.0936	692	4.09	6.00	880	3.68	5.82	YSC 127.
03472 + 0526	17677	10.7176	692	3.43	4.09	880	3.28	3.83	HDS 479; unresolved in 1997 and 2015.
		12.0990	692	4.15	6.69	880	3.61	6.16	
03478 + 3212	17732	10.7202	692	3.54	6.01	562	4.30	5.33	G-C SB2.
		11.6894	692	4.52	7.15	880	3.91	6.99	
03481 + 2459	17759	12.1018	692	4.11	6.14	880	3.76	5.81	HIP suspected double.
03546 + 1346	18274	12.0991	692	3.50	6.75	880	3.16	7.13	HDS 491; unresolved in 2015.
03565 − 1051	18440	11.6894	692	3.19	5.10	880	3.38	5.33	G-C SB2.
03589 + 6506	18608	10.8157	692	4.16	5.82	880	3.90	5.84	Metal-poor SB1.
04034 + 4850	18923	10.7147	692	4.29	6.10	562	4.40	6.90	G-C SB2; unresolved in 1999.
		12.0991	692	4.05	7.01	880	3.68	7.05	
04059 + 1530	19120	10.8185	692	2.59	4.59	880	3.31	4.15	G-C SB2.
		12.0964	692	4.27	7.38	880	4.07	6.33	
04081 − 1209	19290	12.0936	692	3.57	4.30	880	3.58	4.41	HIP suspected double.
04087 + 1006	19348	11.6895	692	4.24	7.09	880	4.46	6.82	HIP suspected double.
		11.9407	692	4.33	7.05	562	4.29	6.14	
04102 + 1828	19470	11.6921	692	3.32	5.17	880	3.30	5.39	HIP suspected double.
04110 + 1417	19526	11.9407	692	4.36	6.44	562	4.35	5.42	HIP suspected double.
04180 + 1815	20056	10.7121	692	3.95	5.25	562	4.01	5.33	G-C SB2.
		11.6921	692	3.03	5.64	880	3.21	5.57	
04209 + 1352	20284	12.0992	692	4.05	7.65	880	3.84	6.86	G-C SB2.
04210 + 4549	20298	12.0992	692	4.05	5.42	880	3.82	6.00	Metal-poor SB1.
04220 + 1547	20389	10.7121	692	3.54	4.56	562	3.79	4.53	OCC 1011; HIP suspected double.
04296 + 0510	20958	12.0993	692	3.89	7.79	880	3.61	7.73	HIP suspected double.
04303 + 0059	21006	12.0964	692	3.66	6.14	880	2.81	3.81	HIP suspected double. K-dwarf.
04345 + 1001	21308	12.0937	692	4.36	6.94	880	4.04	6.64	G-C SB2.
		12.0964	692	4.11	6.82	880	3.60	6.16	
04411 + 2600	21813	12.1019	692	3.73	6.38	880	3.31	5.63	HIP suspected double.
04486 + 4236	22337	10.7202	692	4.42	5.82	562	4.25	5.06	HIP suspected double.
		11.6921	692	3.50	5.40	880	3.69	5.37	
04507 + 5025	22513	10.8158	692	3.72	5.82	880	3.76	5.89	HIP suspected double.
		11.6922	692	3.53	5.57	880	3.79	5.75	
04523 + 6242	22648	10.7202	692	3.32	4.10	562	3.33	4.44	HIP suspected double.
04560 + 5619	22922	10.8158	692	3.92	5.68	880	3.87	5.58	HDS 638; unresolved in 1999.
04561 + 1115	22927	11.6895	692	4.32	5.95	880	3.95	5.47	HIP suspected double.
05011 + 5616	23332	10.7202	692	3.95	4.97	562	3.94	4.80	G-C SB2.
05100 − 0704	24037	10.8159	692	3.83	5.31	880	3.60	5.46	STF 651A.
05104 + 5000	24083	10.7203	692	2.99	4.21	562	3.27	4.19	HIP suspected double.
05175 + 4140	24661	11.9436	692	3.88	6.70	562	3.80	4.78	HIP suspected double.
05183 + 4248	24738	10.7203	692	4.25	7.25	562	4.68	6.84	HIP suspected double.
		11.9436	692	3.83	8.25	562	4.21	6.69	
05235 + 5013	25203	10.7203	692	3.88	5.71	562	3.70	5.11	HIP suspected double.
05271 − 1154	25486	12.1021	692	2.97	6.10	880	3.69	6.45	G-C SB2.
05290 + 3903	25672	11.9437	692	4.17	6.73	562	3.90	5.00	HIP suspected double.
05315 + 5439	25880	12.0965	692	4.15	6.93	880	3.51	6.93	Probable thick disk member.
05403 + 1521	26692	11.9409	692	4.44	6.69	562	4.39	5.98	STF 766B
05405 + 4707	26706	10.7203	692	3.45	4.65	562	3.91	4.84	HIP suspected double.
05420 + 4016	26850	11.9437	692	4.09	6.17	562	4.10	4.94	HIP suspected double.
05510 + 3718	27639	11.9438	692	4.25	8.11	562	4.35	6.64	HIP suspected double.

Table 4—Continued

WDS (α,δ J2000.0)	HIP	Date (2000+)	5-σ Det. Lim., Ch. A λ (nm)	$0.2''$	$1.0''$	5-σ Det. Lim., Ch. B λ (nm)	$0.2''$	$1.0''$	Comment
05541 + 5703	27885	12.0938	692	4.56	6.25	880	4.08	6.24	G-C SB2.
06267 + 1306	30665	10.8133	692	3.91	8.34	880	2.88	7.04	G-C SB2.
		12.0994	692	3.89	7.63	880	3.61	7.10	
06318 + 0647	31118	10.8133	692	3.49	7.39	880	2.78	6.33	G-C SB2.
06327 − 0427	31196	10.8160	692	3.91	5.36	880	3.53	5.11	HIP suspected double.
06394 + 6437	31839	12.0966	692	4.33	6.08	880	3.79	5.58	HIP suspected double.
06436 + 4118	32217	11.9438	692	4.22	6.33	562	4.21	4.84	HIP suspected double.
06539 + 2823	33129	12.1048	692	4.11	6.22	880	4.36	6.00	HIP suspected double.
07113 + 1520	34705	10.8134	692	4.54	7.84	880	3.35	7.46	G-C SB2.
07134 + 5126	34912	12.1020	692	4.14	6.03	880	3.86	6.97	HIP suspected double.
07157 + 0759	35120	10.8134	692	3.94	8.58	880	3.30	7.84	HIP suspected double.
07157 + 4123	35125	10.8161	692	3.65	5.53	880	3.97	5.20	G-C SB2.
		11.9411	692	4.25	6.37	562	4.18	5.10	
07282 + 0930	36290	10.8134	692	3.91	6.80	880	3.42	6.62	HIP suspected double.
07287 + 4755	36334	12.1049	692	4.08	6.29	880	3.85	6.40	HIP suspected double.
07311 + 5003	36545	12.1049	692	4.02	6.26	880	4.02	6.70	HIP suspected double.
07338 + 1324	36771	12.0940	692	4.40	6.99	880	4.14	6.44	G-C SB2; YSC 130.
07366 + 0552	37031	10.8160	692	3.92	6.72	880	3.68	6.70	G-C SB2.
07445 + 3642	37748	12.1021	692	4.46	6.08	880	4.01	5.64	HIP suspected double.
09088 + 2638	44892	12.0995	692	4.35	8.02	880	3.94	7.58	G-C SB2.
09214 − 0640	45887	12.1024	692	3.84	6.07	880	3.28	6.68	G-C SB2.
10253 + 0847	51008	12.1024	692	4.30	7.56	880	3.58	7.39	HIP suspected double.
10341 + 6500	51721	12.0999	692	3.72	4.64	880	3.22	5.61	HIP suspected double.
10423 + 3803	52374	12.0999	692	3.67	6.73	880	3.24	6.02	G-C SB2.
10490 + 4356	52881	11.9415	692	4.57	7.16	562	4.64	5.74	G-C SB2.
10512 + 4648	53051	11.9415	692	4.48	7.09	562	4.44	5.75	LSC 46.
11025 + 5502	53974	12.0944	692	4.27	6.47	880	4.21	6.19	G-C SB2.
11219 + 4940	55493	12.1000	692	3.43	6.12	880	2.74	5.49	HIP suspected double.
11229 + 4449	55565	12.1000	692	3.59	7.10	880	3.29	6.50	G-C SB2.
11288 + 4934	56012	12.1000	692	3.52	6.91	880	2.76	7.33	HIP suspected double.
12152 − 1019	59750	12.1026	692	3.72	7.25	880	3.55	6.88	Metal-poor SB1.
12282 + 2502	60840	12.1027	692	3.92	6.65	880	3.50	6.59	G-C SB2.
12384 + 0151	61658	11.4530	692	3.91	7.13	880	3.10	7.04	HIP suspected double.
12471 + 2237	62384	11.4448	692	4.30	7.56	880	3.82	6.76	G-C SB2.
12549 + 4712	63024	11.4530	692	4.36	6.77	880	3.84	6.85	HIP suspected double.
12578 + 2252	63262	11.4448	692	4.28	6.49	880	3.84	5.72	HIP suspected double.
12585 + 1505	63318	11.4448	692	4.08	5.68	880	3.88	5.16	HIP suspected double.
13065 − 1028	63964	11.4530	692	3.66	4.64	880	2.80	4.01	HIP suspected double.
13235 + 6248	65336	12.1001	692	3.95	6.47	880	3.74	6.69	G-C SB2; YSC 131.
13370 + 2437	66417	11.4475	692	3.97	7.45	880	3.58	7.62	HIP suspected double.
13407 + 5441	66738	11.4421	692	4.36	7.55	880	3.92	7.30	HIP suspected double.
13416 − 0842	66803	11.4558	692	3.90	6.99	880	3.34	7.01	HIP suspected double.
13562 + 2555	68064	11.4421	692	4.33	7.39	880	3.15	6.96	G-C SB2.
13586 + 5335	68271	12.0974	692	4.26	6.04	880	3.74	5.81	G-C SB2.
14067 − 1412	68937	11.4531	692	4.30	6.04	880	3.73	6.27	HIP suspected double.
14090 − 1915	69126	11.4531	692	3.93	5.55	880	4.23	5.94	HIP suspected double.
14158 − 0821	69678	11.4422	692	3.92	4.91	880	3.57	5.62	HIP suspected double.
14222 + 2922	70236	11.4476	692	4.19	7.46	880	3.45	7.46	HIP suspected double.
14297 + 3528	70880	11.4476	692	4.36	6.16	880	3.60	5.77	HIP suspected double.
14471 − 1122	72299	12.0947	692	4.15	5.84	880	3.68	5.68	HIP suspected double.
14471 + 3919	72300	11.4476	692	4.13	6.19	880	4.18	6.76	HIP suspected double.
15089 − 1147	74127	12.0947	692	4.29	6.31	880	3.65	6.17	G-C SB2.
15202 − 1312	75050	11.4559	692	3.68	4.85	880	3.56	4.98	G-C SB2.
15233 + 0703	75318	12.1029	692	4.12	6.20	880	3.57	6.11	HIP suspected double.
15275 − 1058	75663	11.4449	692	4.23	6.18	880	3.75	6.63	G-C SB2.
		12.0947	692	4.14	6.02	880	3.95	6.21	
15400 − 1212	76717	12.0947	692	4.03	5.60	880	3.77	5.69	HIP suspected double.
16166 − 1011	79749	11.4450	692	3.86	5.96	880	3.96	6.30	G-C SB2.
16455 − 1908	82038	11.4451	692	3.59	6.20	880	4.08	6.18	HIP suspected double.
16489 + 5930	82291	11.4477	692	4.34	6.42	880	4.11	6.28	G-C SB2.
17176 + 0145	84600	11.4560	692	3.99	5.77	880	3.52	5.77	G-C SB2.
18153 + 0652	89451	11.4478	692	4.25	6.48	880	3.94	6.68	HIP suspected double.
18186 + 1700	89720	11.4478	692	4.25	6.20	880	3.49	7.17	G-C SB2.
18307 + 1237	90727	11.4478	692	4.37	6.55	880	3.86	6.47	HIP suspected double.
19512 + 4629	...	11.4457	692	3.34	4.08	880	3.93	5.19	GJ 1243.
20599 + 4016	103641	10.8149	692	4.76	7.57	880	4.48	6.45	COU 2431Aa.

Table 4—Continued

WDS (α,δ J2000.0)	HIP	Date (2000+)	5-σ Det. Lim., Ch. A λ (nm)	$0.2''$	$1.0''$	5-σ Det. Lim., Ch. B λ (nm)	$0.2''$	$1.0''$	Comment
21577 + 3323	108412	11.4457	692	3.95	6.50	880	4.28	6.44	G-C SB2.
22034 + 5547	108889	11.9428	692	4.28	5.24	562	3.77	4.42	HIP suspected double.
22057 + 1223	109067	11.9401	692	4.12	6.95	562	4.07	5.43	Metal-Poor SB1.
22253 + 0123	110672	11.4430	692	4.50	7.39	880	3.58	7.48	π Aqr; Be Star
22368 + 4414	111624	11.9428	692	4.45	6.17	562	4.22	5.36	HIP suspected double.
22503 + 7235	112771	10.7225	692	4.12	5.29	880	3.97	5.73	G-C SB2.
23046 + 4413	113950	11.9402	692	3.88	5.37	562	3.84	4.53	HIP suspected double.
23238 + 3232	115500	10.7197	692	4.71	6.64	562	4.58	6.26	G-C SB2.
23254 + 4919	115625	11.9402	692	4.37	6.50	562	3.98	4.54	HIP suspected double.
23263 + 3311	115684	10.7197	692	3.60	4.77	562	3.59	4.78	Metal-poor SB1.
23329 + 0323	116223	11.6891	692	3.76	5.35	880	3.22	5.69	HIP suspected double.
23434 + 5805	117029	10.7198	692	4.30	5.42	562	4.01	5.17	CHR 120Aa,Ab; unresolved in 2012.
23490 + 0952	117461	10.7171	692	3.00	4.04	880	2.17	3.08	HIP suspected double.
23559 + 1514	117986	10.7171	692	4.26	7.06	880	3.62	5.92	HIP suspected double.
23571 + 5542	118077	10.7198	692	4.39	6.34	562	3.99	5.85	G-C SB2.
		11.6919	692	3.79	6.18	880	3.96	6.29	

Table 5. Preliminary Orbits for Three K-Dwarf Systems

Parameter	HDS 99Aa,Ab	WSI 74Aa,Ab	HDS 2053
HIP	3493	62505	71108
Spectrum[a]	K7V	K2.5Vk	K4V
Δm[b]	0.6	1.4	2.3
π, mas[c]	31.81 ± 2.52	41.96 ± 3.00	24.28 ± 2.42
P, years	8.667 ± 0.065	2.643 ± 0.012	23.52 ± 0.36
a, mas	132.4 ± 1.2	$88. \pm 10.$	230.5 ± 3.4
i, degrees	171.5 ± 6.6	59.0 ± 5.7	103.10 ± 0.68
Ω, degrees	$66. \pm 25.$	147.7 ± 2.2	52.15 ± 0.90
T_0, years	2011.977 ± 0.023	2016.35 ± 0.10	2004.49 ± 0.55
e	0.493 ± 0.010	0.520 ± 0.047	0.361 ± 0.025
ω, degrees	$8. \pm 26.$	$139. \pm 10.$	$215. \pm 11.$
$M_{\rm tot}$, $M_\odot$	0.96 ± 0.23	1.31 ± 0.53	1.55 ± 0.48

[a]As it appears in SIMBAD.

[b]An average of values appearing in the 4th Interferometric Catalog that have filter center wavelengths between 500 and 600 nm.

[c]from van Leeuwen (2007).

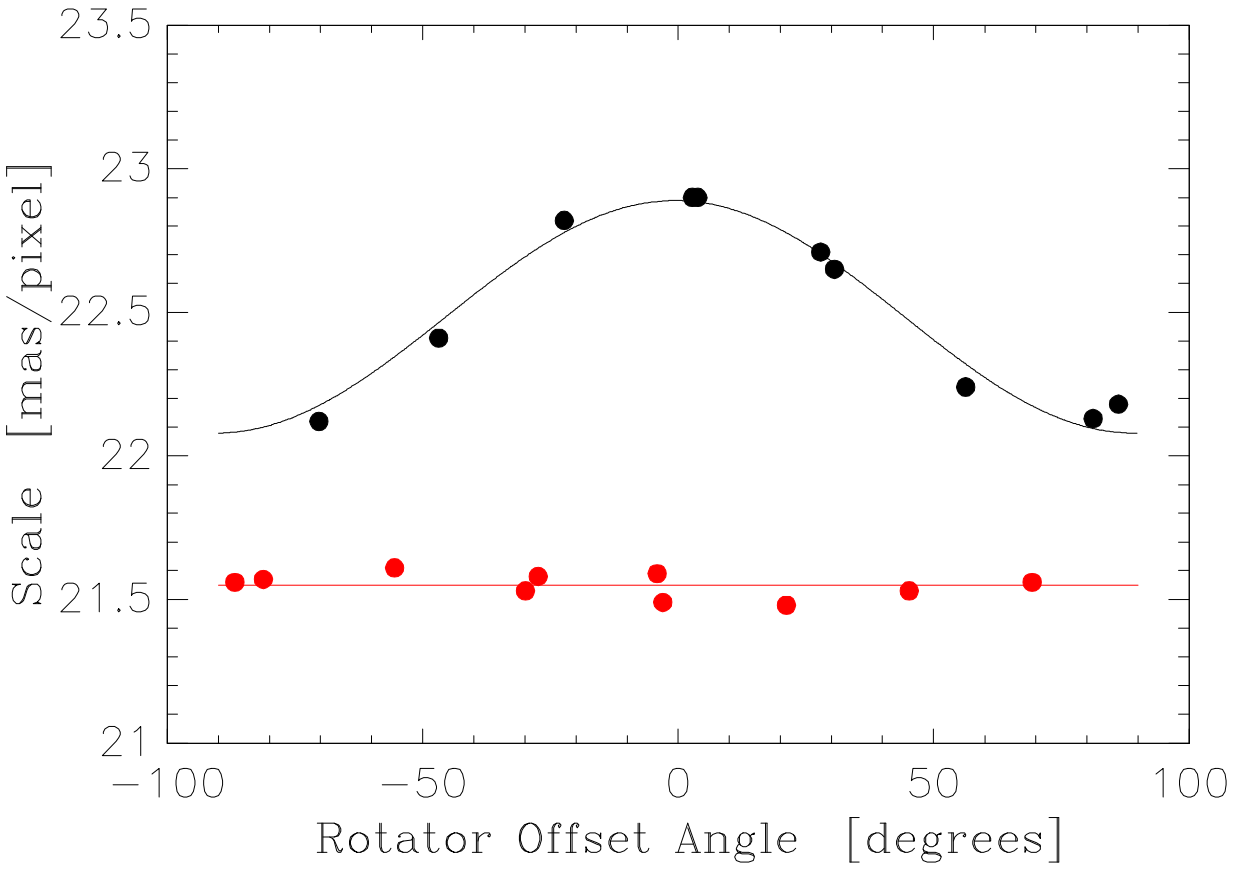

Fig. 1.— Scale determination as a function of instrument rotator angle. In this case, HR 5107 was observed through the slit mask in June 2011. The red points are from Channel A (using the 692-nm filter), and the black points are from Channel B (using the 880-nm filter).

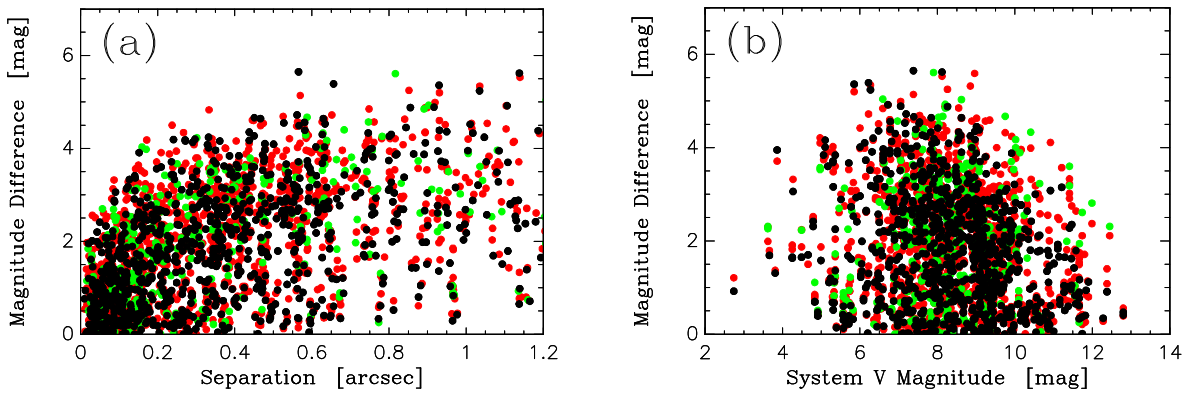

Fig. 2.— Magnitude difference as a function of (a) separation and (b) system V magnitude for the measures listed in Table 2. In both plots, the color of the data point indicates the wavelength of observation, *i.e.* measures taken with the 562 nm filter are shown in green, those taken with the 692 nm filter are shown in red, and those taken in the 880 nm filter are shown as black.

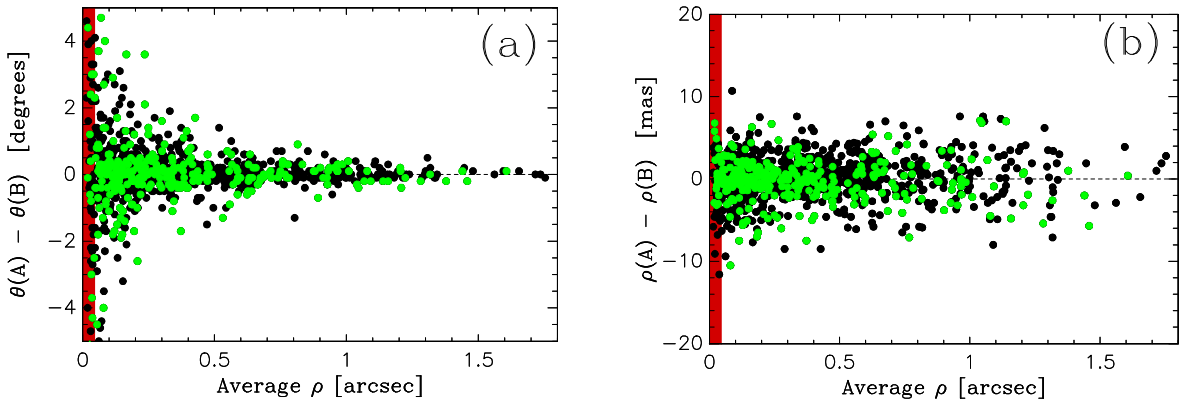

Fig. 3.— Measurement differences between the two channels of the instrument plotted as a function of measured separation, ρ. (a) Position angle (θ) differences as a function of average separation. (b) Separation (ρ) differences as a function of average separation. In both plots, the red shaded area indicates the region below the diffraction limit, and the color of the point indicates the filter used in Channel B of the instrument, *i.e.* 562 nm data are plotted as green points, and 880 nm data are plotted as black points.

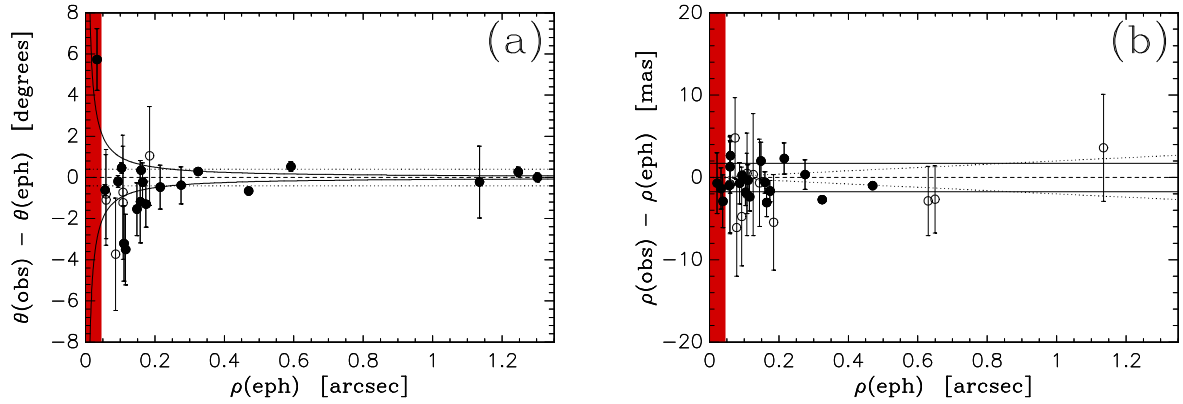

Fig. 4.— Residual plots for systems that have very well-determined orbits, listed in Table 3. (a) Position angle (θ) residuals as a function of ephemeris separation for systems with ephemeris uncertainties less than 4 degrees. (b) Separation (ρ) residuals as a function of ephemeris separation for systems with ephemeris uncertainties of less than 8 mas. In both plots, the red shaded area indicates the region below the diffraction limit, the dashed line is the zero line to guide the eye, the solid curves indicate the instrument repeatability as described in the text, and the dotted curves are the uncertainty values from the scale calibration. For position angles, systems with uncertainties in the orbital prediction of less than 2 degrees are plotted as filled. For separations, systems with ephemeris uncertainties for the epoch of observation of less than 4 mas are shown as filled.

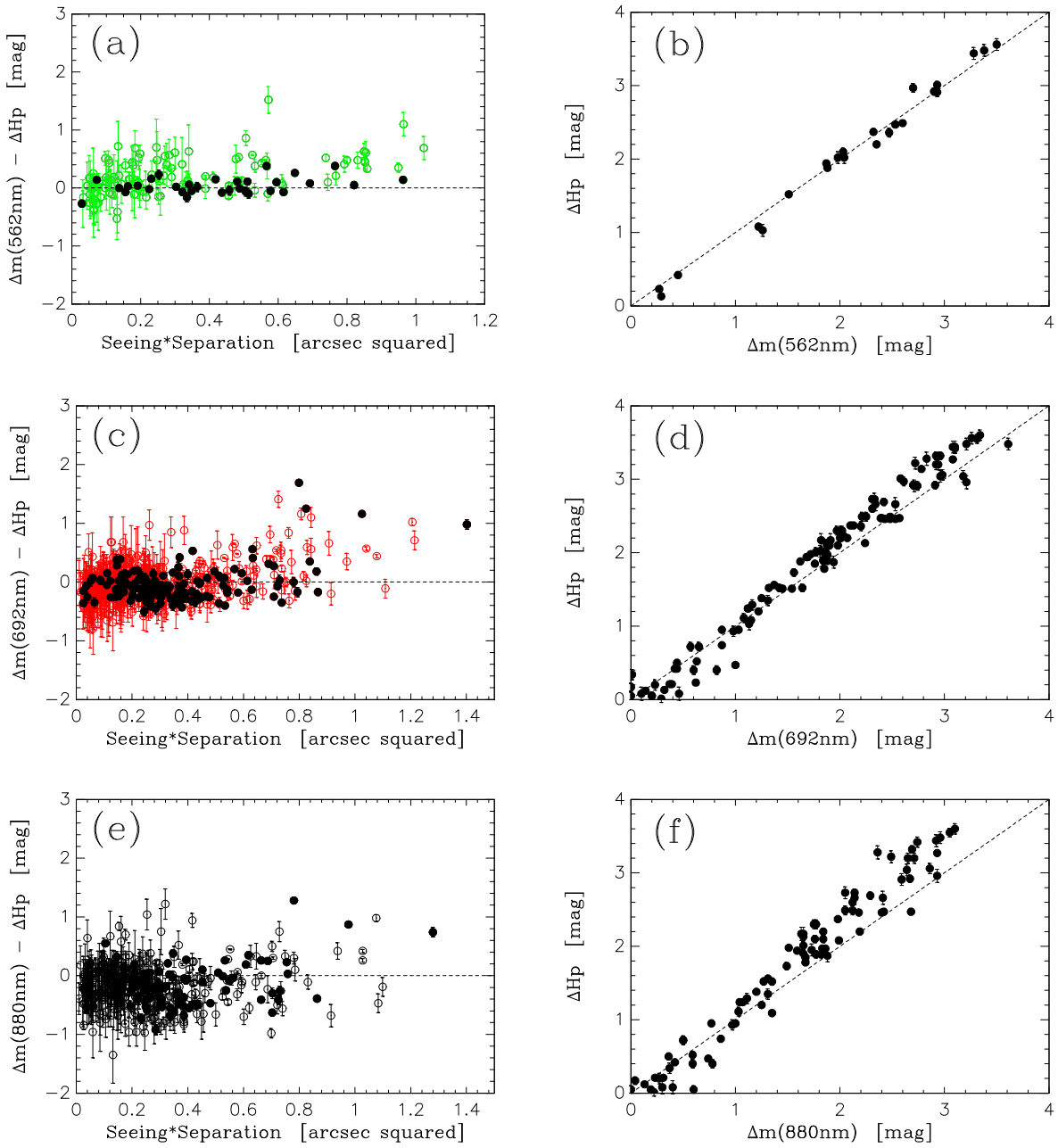

Fig. 5.— Photometric precision for the data set as a whole. In all plots, *Hipparcos* measures with uncertainties less than 0.1 magnitudes are shown as filled black circles, and measures with larger uncertainties are shown as colored open circles, with the color indicating the wavelength used. (a) Differences in Δm as a function of seeing times separation for the 562-nm filter versus ΔH_p. (b) A plot of ΔH_p as a function of Δm obtained at 562 nm. (c) The same as panel (a) for the 692-nm filter. (d) The same as panel (b) for the 692-nm filter. (e) The same as panel (a) for the 880-nm filter. (f) The same as panel (b) for the 880-nm filter.

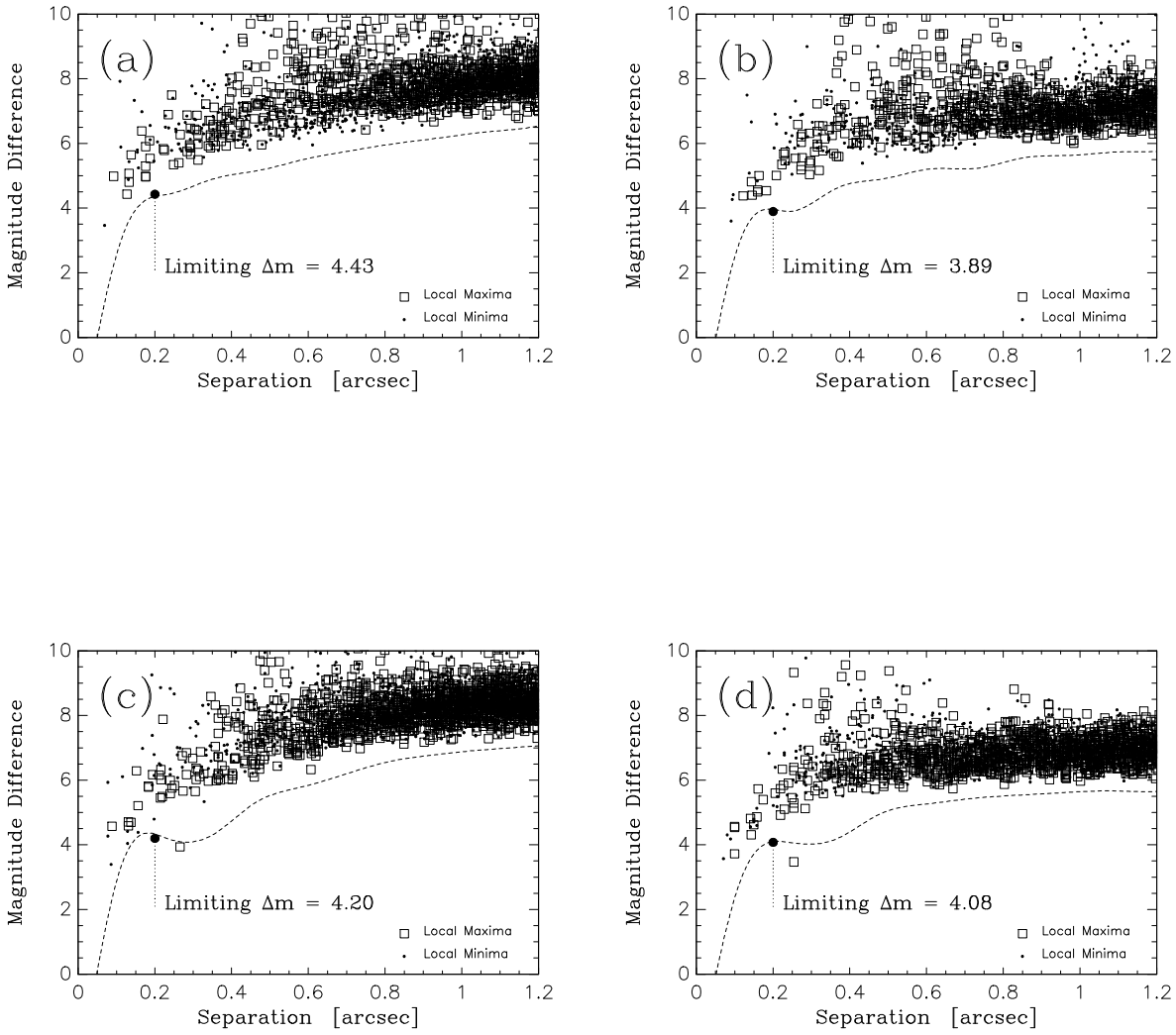

Fig. 6.— Detection limit plots for HIP 16467, where no companion was found, and HIP 31703, where we report a new component in Table 2. In all cases squares represent the positions of local maxima in the reconstructed image and dots represent local minima (where the absolute value of the minimum is used). The dashed line represents the 5-σ line as a function of separation. (a) HIP 16467, at 692 nm. (b) HIP 16467 at 880 nm. Note that in this case no point lies below the 5-σ curve, indicating that no companion was found. (c) YSC 191 = HIP 31703, at 692 nm. (d) YSC 191 = HIP 31703, at 880 nm. In this case, a single square lies below the 5-σ line in both filters, indicating a detection of a companion at a separation of aproximately 0.26 arc seconds.

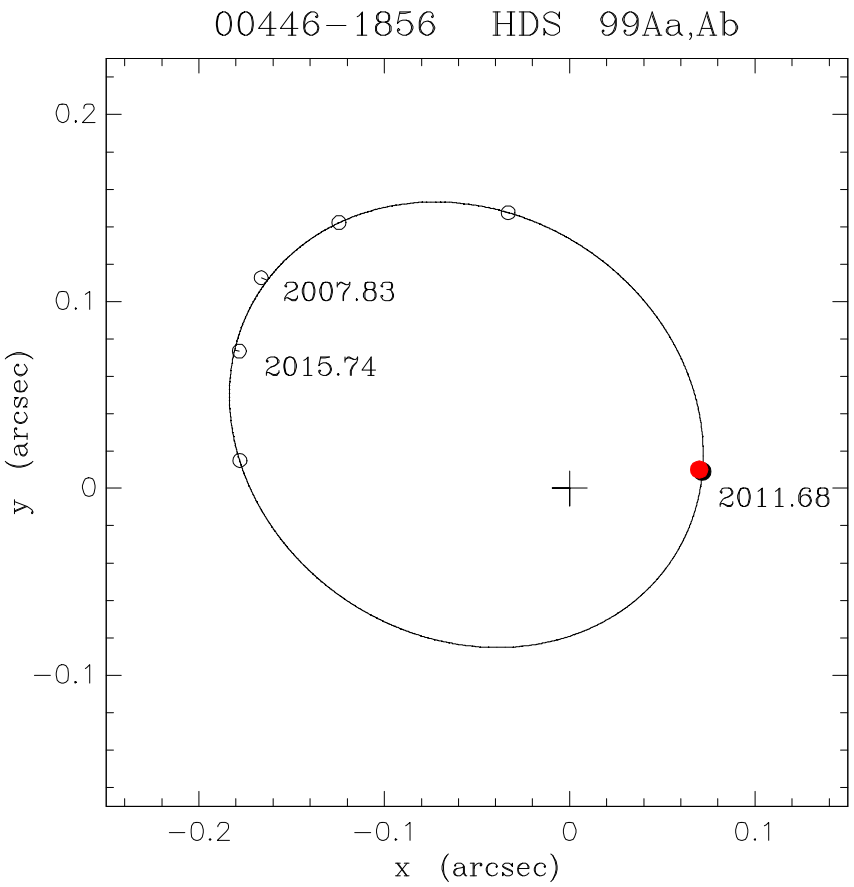

Fig. 7.— Astrometric data of HDS 99Aa,Ab together with the orbit presented in Table 5. The first and last epoch used in the orbit are labeled, as are the points appearing in Table 2. Points shown as open circles are from data in the 4th Interferometric Catalog; points shown as filled circles indicate data from Table 2, where the color of the point indicates the wavelength of the observation (red being 692 nm and black being 880 nm). In all cases, a line segment is drawn from the ephemeris position to the center of the observational point. North is down and East is to the right.

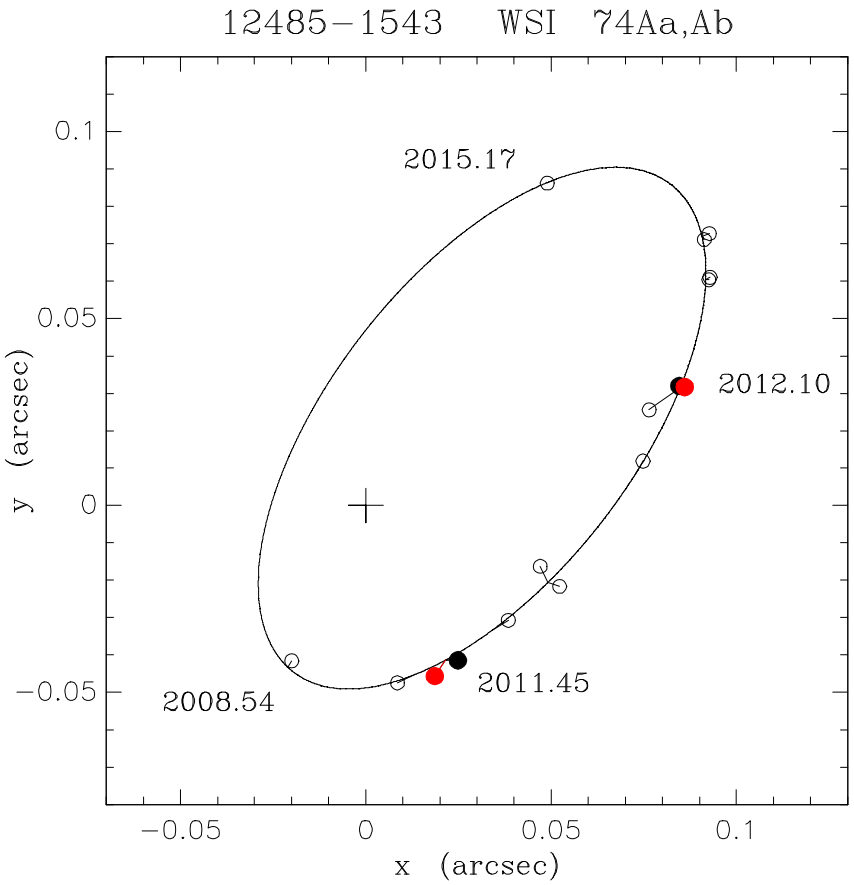

Fig. 8.— Astrometric data of WSI 74Aa,Ab together with the orbit presented in Table 5. The first and last epoch used in the orbit are labeled, as are the points appearing in Table 2. Points shown as open circles are from data in the 4th Interferometric Catalog; points shown as filled circles indicate data from Table 2, where the color of the point indicates the wavelength of the observation (red being 692 nm and black being 880 nm). In all cases, a line segment is drawn from the ephemeris position to the center of the observational point. The quadrant of the 2011 observations shown in Table 2 is inconsistent with other existing measures; we have reversed that here and in the orbit calculation. North is down and East is to the right.

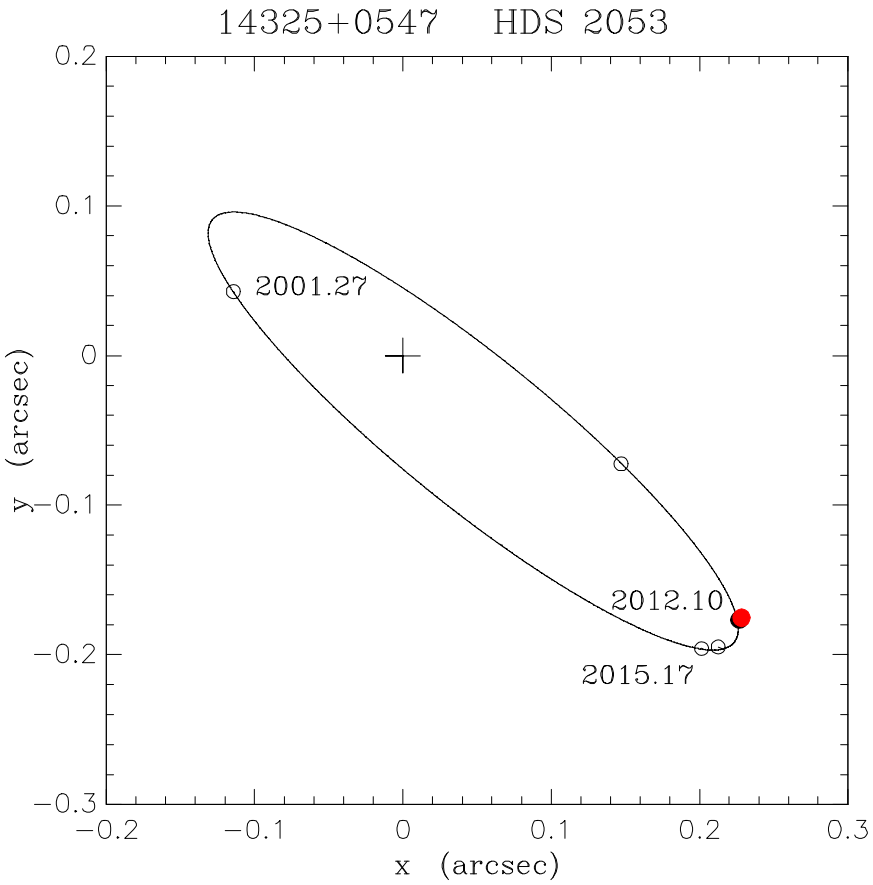

Fig. 9.— Astrometric data of HDS 2053 together with the orbit presented in Table 5. The first and last epoch used in the orbit are labeled, as are the points appearing in Table 2. Points shown as open circles are from data in the 4th Interferometric Catalog; points shown as filled circles indicate data from Table 2, where the color of the point indicates the wavelength of the observation (red being 692 nm and black being 880 nm). In all cases, a line segment is drawn from the ephemeris position to the center of the observational point. North is down and East is to the right.